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FOURTH EDITION

Prepared by
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October 1980

ENERGY DIVISION

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The work of Terry Wheeling, who prepared the first edition of *Montana Historical Energy Statistics* in 1976, and Rick Itami, who prepared the second and third editions in 1978 and 1979, is also acknowledged.

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INTRODUCTION

NOTES REGARDING THE DATA

Montana Historical Energy Statistics is a compilation of energy sales, consumption and production data gathered from state, federal and private sources. In some instances, two sources may show different figures for basically the same data item. Such discrepancies are the result of differences in data collection methods and reporting procedures. The Energy Division is not responsible for explaining these differences, beyond noting that differences in procedures, terminology, definitions, etc. exist. Readers who wish to resolve discrepancies should contact the sources of the data or the Energy Division for further explanation.

Sales of energy products do not necessarily indicate consumption of these products. Some forms of energy may be added to storage facilities during the reporting period, causing sales to exceed consumption. Similarly, actual consumption may exceed sales if stockpiles are reduced by energy storage withdrawals.

In many cases, detail figures do not add to totals. This can occur when the detail items have been rounded independently of the totals, or when the aggregate figures are based on unpublished revisions of the detail figures. For example, many federal publications are published both monthly and annually, but the annual figures reflect unpublished additions, corrections, and revisions to the monthly data. In such cases, the reader should consider the detail figures indicative rather than definitive.

When a source is cited with the name of an office, bureau, or company and no reference to a particular publication, the information was provided over the telephone.

Comments, corrections, suggestions, and requests for assistance should be addressed to the Energy Division, Department of Natural Resources and Conservation, 32 South Ewing, Helena, Montana 59620; telephone 449-3940.

MAJOR CHANGES AND REVISIONS IN THE FOURTH EDITION

Energy Consumption

The United States Department of Energy recently developed and published historical energy consumption figures. *Montana Historical Energy Statistics* now reports these figures rather than the approximations previously developed by the Energy Division staff. The Department of Energy figures are consistently somewhat higher than the estimates used previously.

Wood and waste products used to generate electricity: the source publication uses fossil-fuel equivalent Btu; these figures have all been lowered by using 3,412 Btu/kWh to convert the physical units to British thermal units.

Hydroelectric power: the source publication includes interstate sales of electricity and uses fossil-fuel equivalent Btu. Hydroelectric power actually consumed in Montana was estimated as follows:

Sales of electricity to ultimate consumers in Montana were inflated to account for the estimated 8 percent transmission-line loss from generation to consumer. This figure was then used as the estimated electrical power generation for Montana consumption. One-half of the Colstrip I and II total generation was subtracted from the total estimated electrical generation for the years 1975-1979. All oil, gas, and wood and waste generated electricity which accounted for at least 2 percent of the year's electrical generation was also subtracted.

In addition, all of the non-Colstrip coal-fired generation was subtracted. The remaining quantity presumably estimates the hydroelectric power generated for consumption in Montana. (The percentage of total generation thus classified as hydroelectric generation agreed with an independent estimate by former Lieutenant Governor Bill Christiansen.)

The estimated kilowatt-hour hydroelectric generation figures were then multiplied by 3,412 Btu/kWh.

Energy Production

Several substantial errors were found in plots of total energy production and crude oil production. Revisions of these plots produced smoother energy production curves.

Distribution of Montana Coal by State of Destination

The title of the table showing distribution of Montana coal by state of destination has been changed to match the source document. Tables in previous editions, because of their titles, may give an impression of more coal being distributed from the source states than was actually the case.

Sales of Natural Gas by Utility

This table has been extensively revised following the discovery that the base natural gas pressure used by Montana Power in its reports to the Public Service Commission was not the pressure assumed by the Energy Division. The Montana Power Company data was, therefore, extensively revised, causing similar revisions of the other utilities' shares of Montana sales and the total natural gas sales. Sales of natural gas in this table now differ substantially from gas sales reported elsewhere in the publication.

SECTOR DEFINITIONS

For consumption data, the U.S. Department of Energy uses sector definitions from the publication series:

U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, EIA—0035 (year)(month).

They are as follows:

1) Residential and Commercial Sector: housing units, non-manufacturing business establishments (e.g., wholesale and retail businesses), health and education institutions and government office buildings;
2) Industrial Sector: construction, manufacturing, agriculture, and mining establishments;
3) Transportation Sector: private and public passenger and freight transportation, and government transportation, including military operations;
4) Electric Utilities Sector: privately- and publicly-owned establishments that generate electricity primarily for resale.

For monthly sales of electricity to ultimate consumers, the *Code of Federal Regulations*, volume 18, parts 0-149 (page 386 in the 1979 edition) is used. This separates the commercial and industrial sectors based on the size of their demand; firms with more than 1,000 kilowatts of demand are in the "industrial" sector, and the others are in the "commercial" sector. Exceptions are made for firms engaged in recognized "industrial" activities (regardless of scale) and for firms classified by the applicable electrical rate schedule.

The American Gas Association uses the following definitions:

1) Residential Sector: Covers service to customers for domestic purposes—single, multifamily and mobile homes, etc. (In residential service, the number of housing units within a structure determines the customer classification.);
2) Commercial Service: Covers service to customers engaged in wholesale or retail trade, agriculture, communications, finance, fisheries, forestry, government insurance, real estate, transportation, etc., and to customers not directly involved in other classes of service;
3) Industrial Service: Covers service to customers engaged primarily in a process involving either the extraction of raw materials from the earth or a change of raw or unfinished materials into another form or product. (This class includes sales of gas for generating electric power.);
4) Other Services: Service to municipalities or divisions (agencies) of state or federal governments under special contracts or agreements or service classifications, which are applicable only to public authorities using gas for general or industrial purposes, except for sales properly included under items 2 or 3 above, such as manufacturing arsenals or publicly-owned power systems;
5) Sales for Resale (Uniform System of Accounts, 483): Service to other utility companies, governmental agencies (municipal, county, state or federal), rural cooperatives, etc., for distribution and resale to ultimate customers. (Service to other utilities for use by them, and not for distribution and resale, is classified as residential, commercial, or industrial, depending upon the primary business or economic activity.)

Sales by utilities: Each utility defines the consuming sectors in terms of its own assessment of customer size based on the number of cubic feet of natural gas and kilowatt-hours of electricity consumed. (The Public Service Commission and the Consumer Council do not set guidelines.)

1) Residential customers are generally defined as metered family dwellings.
2) Commercial customers are those engaged in business on a relatively small scale, whose demand for natural gas and electricity is generally for heating or cooling and lighting.
3) The utilities generally distinguish "firm" from "interruptible" industries.

The Montana Power Company distinguishes between commercial and "firm" industrial customers by classifying companies as industrial customers if they engage in manufacturing, ore processing, etc. "Interruptible" industrial customers are those who use more than 60,000 MCF of natural gas per year.

Montana-Dakota Utilities defines industrial consumers as those which are engaged in manufacturing, processing or production for sales and use at least 36,720 MCF per year. Residential customers are those living in single-family dwellings or, in master-metered areas, those with five or fewer meter customers. (This has recently been lowered to four or fewer meter customers.) All other customers are classified as commercial. Customers with facilities to burn alternate fuels during peak load situations are classified as "interruptible" commercial customers.

Publications reporting sales of fuel oil and kerosene use the sector definitions determined by the U.S. Bureau of the Census.

Publications reporting sales of liquefied petroleum gases and ethane depend on the definitions used by the fuel suppliers. Fuel suppliers depend on volume and knowledge of the firm's activities to classify the customer.

Publications reporting natural gas production and consumption depend largely on the fuel supplier's classification. Suppliers classify their customers on the basis of rate structures and knowledge of the customers' activities. To be consistent with the definitions used by the Bureau of Mines and the American Gas Association, however, "four or more households on one meter" is classified as commercial.

(These sector definitions are expected to change with the implementation of the Natural Gas Policy Act.)

The Edison Electric Institute uses accounts provided by the Department of Energy. Commercial and industrial classification is generally based on the Standard Industrial Classification code category, with kilowatt-hour usage used as a yardstick. Edison Electric recommends that comparisons be based on their monthly subtotal figures which combine commercial and industrial sales; these figures are available from their Washington, D.C. office.

NOTE: Because sector definitions vary, and because customers are likely to change sectors over the years, the reader is cautioned against casual data comparison between sources or over extensive time periods.

DEFINITIONS AND EQUIVALENTS

Associated Natural Gas Natural gas that occurs in crude oil reservoirs as free gas

Average Megawatt 8.76 million kilowatt-hours

Barrel 42 gallons

Condensate Liquid hydrocarbons produced with natural gas which are separated from the gas by cooling and other means

Crude Oil Raw, unrefined oil as it appears at the time of extraction from its natural reservoir

Distillate Fuel Oils Products of refinery distillation sometimes referred to as middle distillates, i.e., kerosene, diesel fuel, home heating oil

Firm Natural gas deliveries that will not be interrupted even during times of shortage

Interruptible Natural gas deliveries that may be interrupted during times of shortage

Mine-mouth Price The price of coal at the point of extraction before taxes, processing costs and transportation costs are added

Nonassociated Natural Gas Free natural gas not in contact with crude oil in the reservoir

Raw NGL Mix A mixed hydrocarbon stream containing, in whole or part, mixtures of ethane, butane (isobutane and normal butane), propane or natural gasoline

Residuals Oils that are "leftovers" in various refining processes; heavy black oils used in ships' boilers and in heating plants

Short Ton 2,000 pounds

ENERGY CONVERSION FACTORS

Fuel	Approximate Btu Content
Coal:	
Anthracite (U.S. Average)	25,400,000 Btu/short ton
Bituminous (U.S. Average)	23,650,000 Btu/short ton
Subbituminous (Montana)	17,500,000 Btu/short ton
Lignite (Montana)	13,000,000 Btu/short ton
(Dry) Natural Gas	1,000 Btu/cubic foot
Crude Oil	5,610,000 Btu/barrel
Refined Petroleum Products:	
Motor gasoline	5,250,000 Btu/barrel
Distillate fuel oil	5,830,000 Btu/barrel
Residual fuel oil	6,290,000 Btu/barrel
Kerosene	5,670,000 Btu/barrel
Liquefied petroleum gases (propane-butane mix)	4,011,000 Btu/barrel
Lubricants	6,070,000 Btu/barrel
All products, average	5,520,000 Btu/barrel
Electricity	3,412 Btu/kilowatt-hour

ABBREVIATIONS

AGA	American Gas Association
bbl	Barrel
Btu	British thermal unit
DOE	United States Department of Energy
kWh	Kilowatt-hour
LPG	Liquefied petroleum gas
MCF	Thousand cubic feet
MDU	Montana-Dakota Utilities
MEC	Montana Energy Council
MLP	Montana Light and Power
MMCF	Million cubic feet
MPC	Montana Power Company
NA	Not available
NGL	Natural gas liquids
PPL	Pacific Power and Light
psia	Pounds per square inch absolute
PSP&L	Puget Sound Power and Light
r	Revised
SIC	Standard Industrial Classification (code)
WWP	Washington Water Power

1

ENERGY PRODUCTION AND CONSUMPTION

HIGHLIGHTS

- Total production of energy in Montana was 824 trillion British thermal units (Btu) in 1979, up 100 trillion Btu from the 1978 production figure.
- Coal accounted for most (68.8 percent) of the total energy produced in Montana in 1979, followed by crude oil (20.4 percent), natural gas (6.5 percent) and hydroelectric power generation (4.3 percent).
- Montanans consumed 337 trillion Btu in 1978 (the latest year for which figures are available). This is 6 percent more energy than was consumed in 1977.
- More than half the energy consumed in Montana in 1978 was in the form of petroleum products. Petroleum products accounted for 51.7 percent of Montana's energy consumption, followed by natural gas at 21.9 percent, coal at 17.5 percent and hydroelectric power at 8.8 percent.
- Industry, including agriculture, was the largest consuming sector. In 1978, industry consumed 37.2 percent of the energy sold in Montana. Transportation, mostly in the form of petroleum products, accounted for 28.8 percent of the consumption. The residential and commercial sectors consumed 18.8 percent and 15.3 percent, respectively, of the energy sold in Montana.

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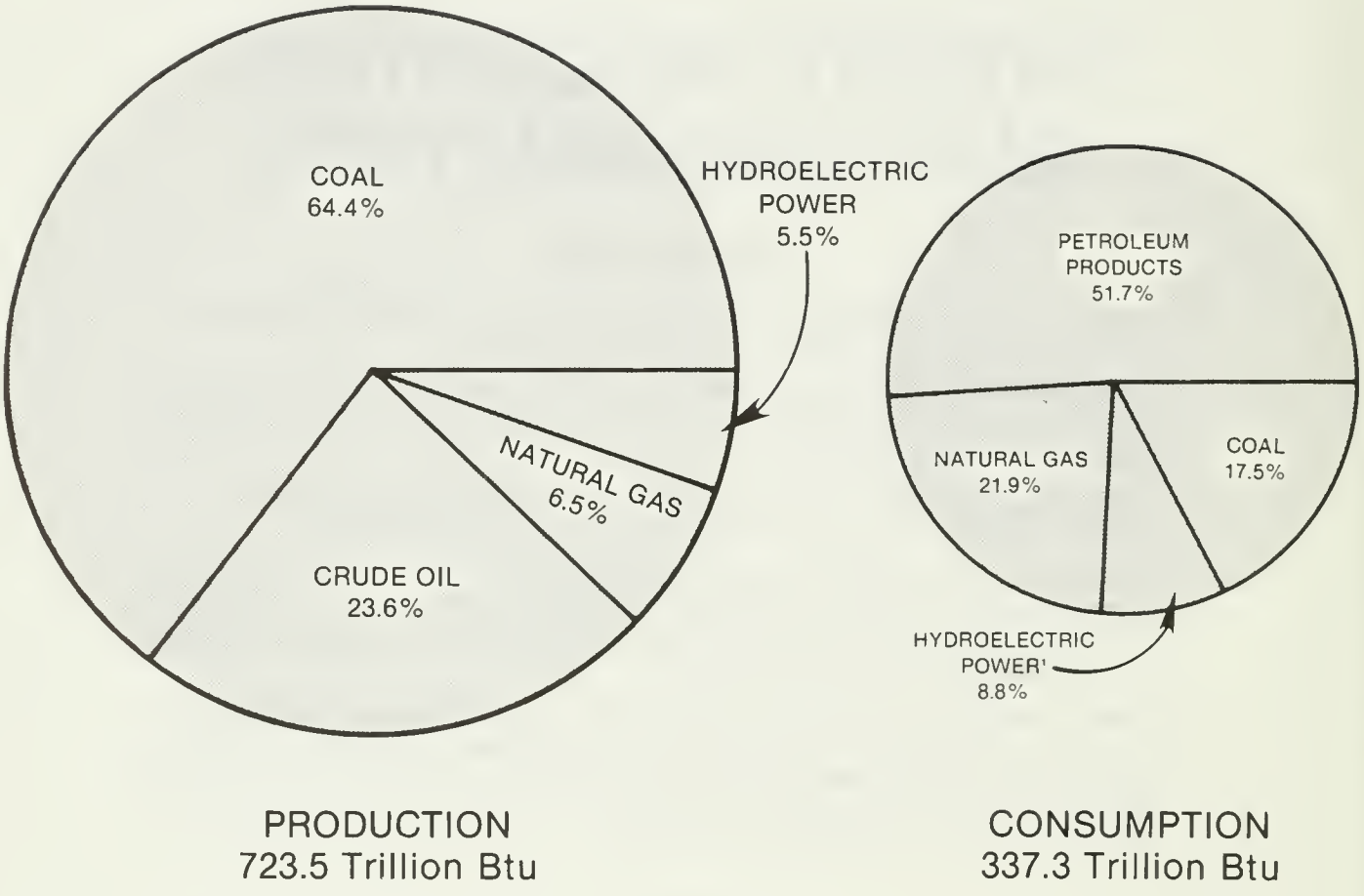

FIGURE 1.1 PRODUCTION AND CONSUMPTION OF ENERGY IN MONTANA, 1978

NOTE: Fuels contributing less than 0.1% of the total production or consumption are not shown.

[1]Hydroelectric power consumption was estimated as indicated on page vi.

SOURCES: Coal Production: Montana Department of Labor and Industry, Workers' Compensation Division, Safety and Health Bureau.

Hydroelectric Power Production: U.S. Department of Energy, Energy Information Administration, *Power Production, Fuel Consumption and Installed Capacity Data*, 1978 (EIA-0049).

Natural Gas and Crude Oil Production: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1978.

Consumption: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report: Statistical Tables and Technical Documentation, 1960 through 1978* (EIA-0214 (78)).

TABLE 1.1
PRODUCTION OF ENERGY BY TYPE OF FUEL, 1960-79
(physical units)

Year	Subbituminous Coal (thousand tons)	Lignite Coal (thousand tons)	(Dry) Natural Gas (million cubic feet)	Crude Oil (thousand barrels)	Hydroelectric Power (million kilowatt-hours)	Wood & Waste (million kilowatt-hours)
1960	113.000	200.000	35,381	30,240	5,801	NA
1961	97.000	274.000	34,884	30,906	6,499	0
1962	78.000	304.000	28,973	31,648	6,410	0
1963	53.000	290.000	27,113	30,870	6,011	0
1964	46.000	300.000	25,234	30,647	6,821	31
1965	63.000	301.000	27,873	32,778	8,389	37
1966	91.000	328.000	32,414	35,380	7,940	38
1967	65.000	300.000	31,619	34,959	8,703	56
1968	189.000	330.000	31,917	48,460	8,925	74
1969	722.000	308.000	41,229	43,954	9,447	61
1970	3,124.000	323.000	37,445	37,879	8,745	73
1971	6,737.000	327.000	38,137	34,599	9,595	60
1972	7,899.000	322.000	35,606	33,904	9,444	50
1973	10,411.000	314.000	58,896	34,620	7,517	48
1974	13,775.000	331.000	51,401	34,554	9,726	16
1975	21,620.000	520.000	44,546	32,844	9,560	14
1976	25,919.000	312.000	45,098	32,814	12,406	3
1977	27,091.013	302.426	48,181	32,680	8,460	46
1978	26,390.466	288.708	47,140	30,467	11,708	52
1979	32,148.549	305.143	53,888	29,957	10,344	52

NOTE: Because data on some fuels are not available, production of energy may be slightly understated.

SOURCES: Coal: U.S. Bureau of Mines (1960-76); Montana Energy Office (1977); Montana Department of Labor and Industry, Workers' Compensation Division, Safety and Health Bureau (1978-79).

Hydroelectric Power and Wood and Waste: Federal Power Commission (1960-76); U.S. Department of Energy, Energy Information Administration, *Power Production, Fuel Consumption and Installed Capacity Data*, annual reports for 1977-79 (EIA-0049).

Natural Gas and Crude Oil: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1960-79.

TABLE 1.2
PRODUCTION OF ENERGY BY TYPE OF FUEL, 1960-79
(trillion Btu)

Year	Subbituminous Coal	Lignite Coal	Coal Total	(Dry) Natural Gas	Crude Oil	Hydroelectric Power	Wood & Waste	TOTAL
1960	1.978	2.600	4.578	35.381	169.646	19.793	NA	**229.398**
1961	1.698	3.562	5.260	34.884	173.383	22.174	0	**235.701**
1962	1.365	3.952	5.317	28.973	177.545	21.871	0	**233.706**
1963	0.928	3.770	4.698	27.113	173.181	20.510	0	**225.502**
1964	0.805	3.900	4.705	25.234	171.930	23.273	0.106	**225.248**
1965	1.102	3.913	5.015	27.873	183.884	28.623	0.126	**245.521**
1966	1.592	4.264	5.856	32.414	198.482	27.091	0.130	**263.973**
1967	1.138	3.900	5.038	31.619	196.120	26.695	0.191	**262.663**
1968	3.308	4.290	7.598	31.917	271.861	30.452	0.252	**342.080**
1969	12.635	4.004	16.639	41.229	246.582	32.233	0.208	**336.891**
1970	54.670	4.199	58.869	37.445	212.501	29.838	0.249	**338.902**
1971	117.898	4.251	122.149	38.137	194.100	32.738	0.205	**387.329**
1972	138.232	4.186	142.418	35.606	190.201	32.223	0.171	**400.619**
1973	182.192	4.082	186.274	58.896	194.218	25.648	0.164	**465.200**
1974	241.062	4.303	245.365	51.401	193.848	33.185	0.546	**524.345**
1975	378.350	6.760	385.110	44.546	184.255	32.619	0.478	**647.008**
1976	453.582	4.056	457.638	45.098	184.086	42.329	0.126	**729.277**
1977	474.093	3.932	478.025	48.181	183.335	28.866	0.157	**738.564**
1978	461.833	3.753	465.586	47.140	170.920	39.948	0.177	**723.771**
1979	562.600	3.967	566.567	53.888	168.059	35.294	0.177	**823.985**

NOTE: This table gives the Btu equivalents of the physical units shown in Table 1.1.

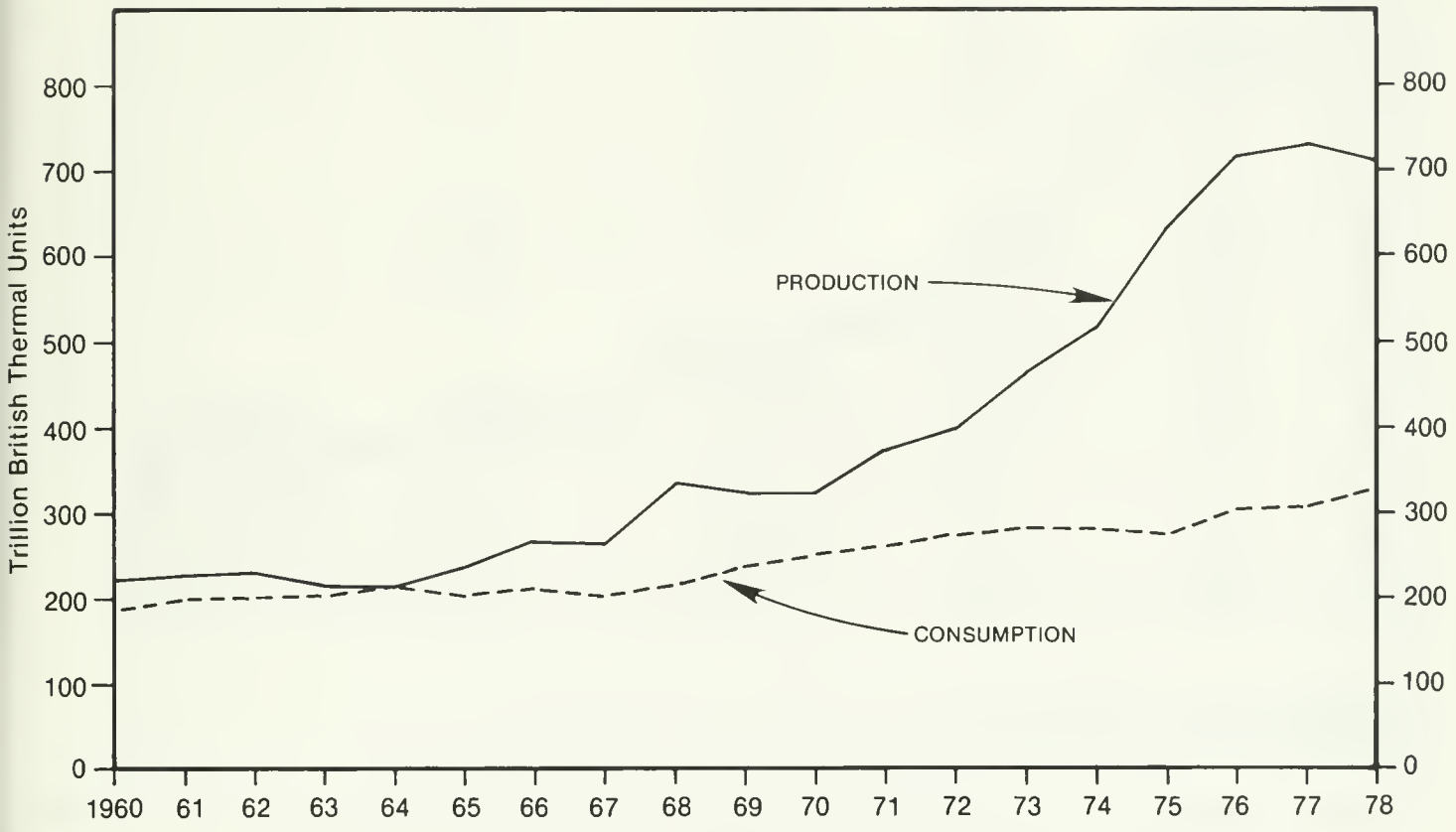

FIGURE 1.2 PRODUCTION AND CONSUMPTION OF ENERGY IN MONTANA, 1960-78

SOURCES: Coal Production: U.S. Department of the Interior, Bureau of Mines (1960-76); Montana Energy Office (1977); Montana Department of Labor and Industry, Workers' Compensation Division, Safety and Health Bureau (1978).

Hydroelectric Power Production: Federal Power Commission (1960-1976); U.S. Department of Energy, Energy Information Administration, *Power Production, Fuel Consumption and Installed Capacity Data*, annual reports for 1977-78 (EIA-0049).

Natural Gas and Crude Oil Production: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1960-78.

Consumption: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report: Statistical Tables and Technical Documentation, 1960 through 1978* (EIA-0214 (78)).

TABLE 1.3
CONSUMPTION OF ENERGY BY TYPE OF FUEL, 1960-79
(physical units)

Year	Coal (thousand tons)	(Dry) Natural Gas (million cubic feet)	Petroleum (thousand barrels)	Estimated Hydroelectric Power (million kilowatt-hours)[1]	Wood and Waste (million kilowatt-hours)[2]
1960	253	55,689	20,120	4,972	0
1961	334	59,241	22,046	4,842	0
1962	373	63,459	21,567	4,736	0
1963	356	66,566	21,628	4,961	0
1964	380	69,417	22,384	5,517	31
1965	368	70,724	20,039	6,153	37
1966	389	72,044	20,657	6,912	39
1967	381	65,038	19,820	6,873	56
1968	449	62,898	21,886	7,645	74
1969	619	78,283	22,564	8,809	61
1970	762	87,791	22,007	8,317	73
1971	730	88,271	23,428	8,762	61
1972	828	84,322	25,799	9,533	51
1973	950	90,230	27,395	7,434	48
1974	923	79,909	28,032	8,758	16
1975	1,144	79,520	27,032	7,886	14
1976	2,497	74,371	29,932	7,960	37
1977	3,382	70,956	28,940	7,819	46
1978	3,389	72,649	31,595	8,713	52
1979	[3]	[3]	[3]	8,911	[3]

[1]Estimated from sales to ultimate consumers and fossil fuel generation; see note page vi.
[2]Consumed at utilities to produce electricity.
[3]Not available.

SOURCE: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report: Statistical Tables and Technical Documentation, 1960 through 1978* (EIA-0214 (78)). (Revised as indicated on page vi.)

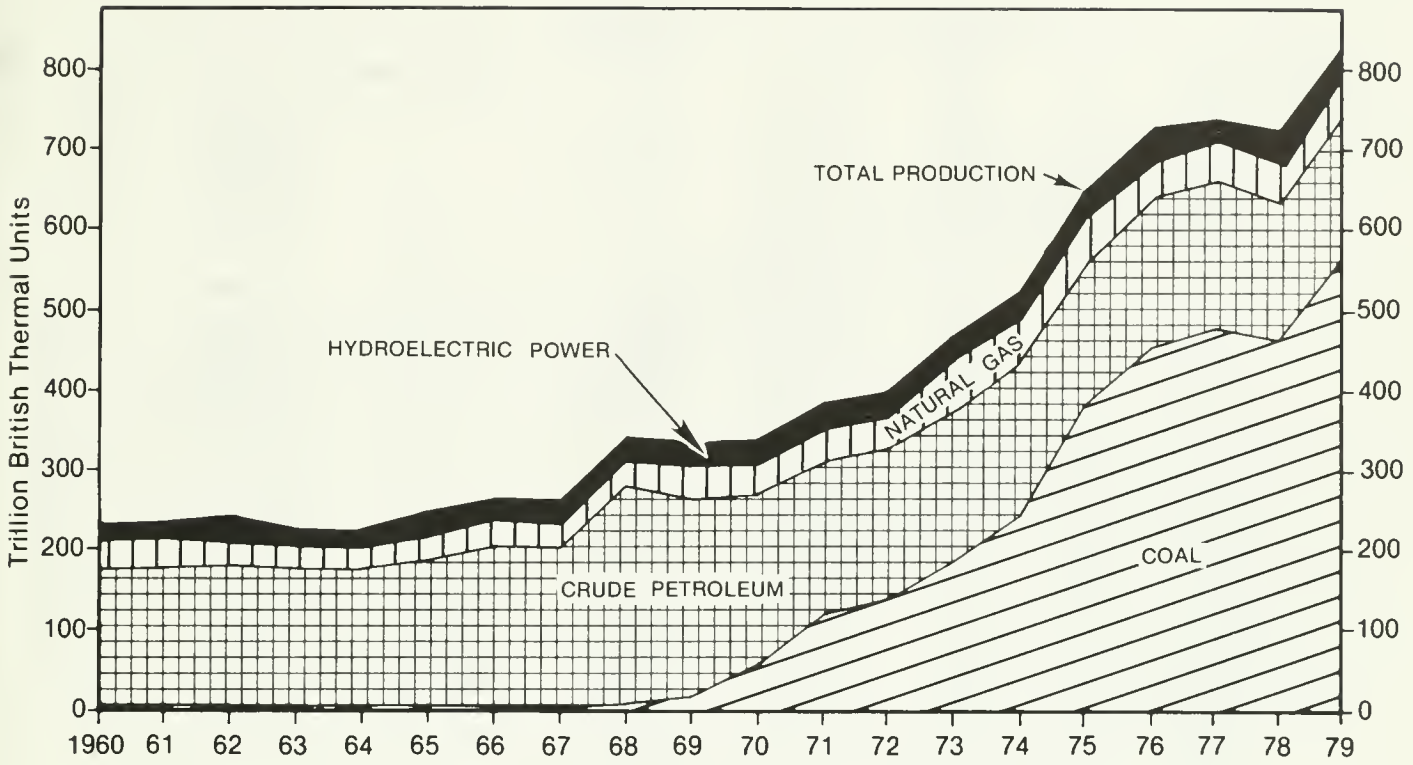

FIGURE 1.3 PRODUCTION OF ENERGY IN MONTANA BY TYPE OF FUEL, 1960-79

NOTE: Wood and waste products used to generate electricity at electric utilities are not shown because their contribution is too small to be visible on the scale used.

SOURCES: Coal: U.S. Department of the Interior, Bureau of Mines (1960-76); Montana Energy Office (1977); Montana Department of Labor and Industry, Workers' Compensation Division, Safety and Health Bureau (1978-79).

Hydroelectric Power: Federal Power Commission (1960-76); U.S. Department of Energy, Energy Information Administration, *Power Production, Fuel Consumption and Installed Capacity Data*, annual reports for 1977-79 (EIA-0049).

Natural Gas and Crude Oil: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1960-79.

TABLE 1.4
CONSUMPTION OF ENERGY BY TYPE OF FUEL, 1960-79
(trillion Btu)

Year	Coal	Dry Natural Gas	Petroleum	Estimated Hydroelectric Power	Wood and Waste	TOTAL
1960	4.279	57.638	111.787	16.964	0	**190.668**
1961	5.435	61.314	122.423	16.521	0	**205.693**
1962	6.017	65.680	119.610	16.159	0	**207.466**
1963	5.667	68.630	119.691	16.927	0	**210.915**
1964	6.159	71.638	123.740	18.824	0.106	**220.467**
1965	5.828	72.987	110.855	20.994	0.126	**210.790**
1966	6.076	74.421	114.274	23.584	0.133	**218.488**
1967	5.741	67.119	109.308	23.451	0.191	**205.810**
1968	6.947	64.848	120.460	26.085	0.252	**218.592**
1969	9.868	80.710	123.920	30.056	0.208	**244.762**
1970	12.231	90.513	121.106	28.378	0.249	**252.477**
1971	11.819	91.007	128.946	29.896	0.208	**261.876**
1972	13.505	86.599	141.894	32.526	0.174	**274.698**
1973	15.581	92.044	151.081	25.365	0.164	**284.235**
1974	15.090	81.825	154.289	29.882	0.054	**281.140**
1975	18.802	81.117	148.515	26.907	0.048	**275.389**
1976	42.769	75.787	164.743	27.160	0.126	**310.585**
1977	59.087	72.314	159.923	26.678	0.157	**318.159**
1978	59.163	73.828	174.375	29.729	0.177	**337.272**
1979	[1]	[1]	[1]	30.404	[1]	[1]

[1]Not available.

SOURCE: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report: Statistical Tables and Technical Documentation, 1960 through 1978* (EIA-0214 (78)). (Revised as indicated on page vi.)

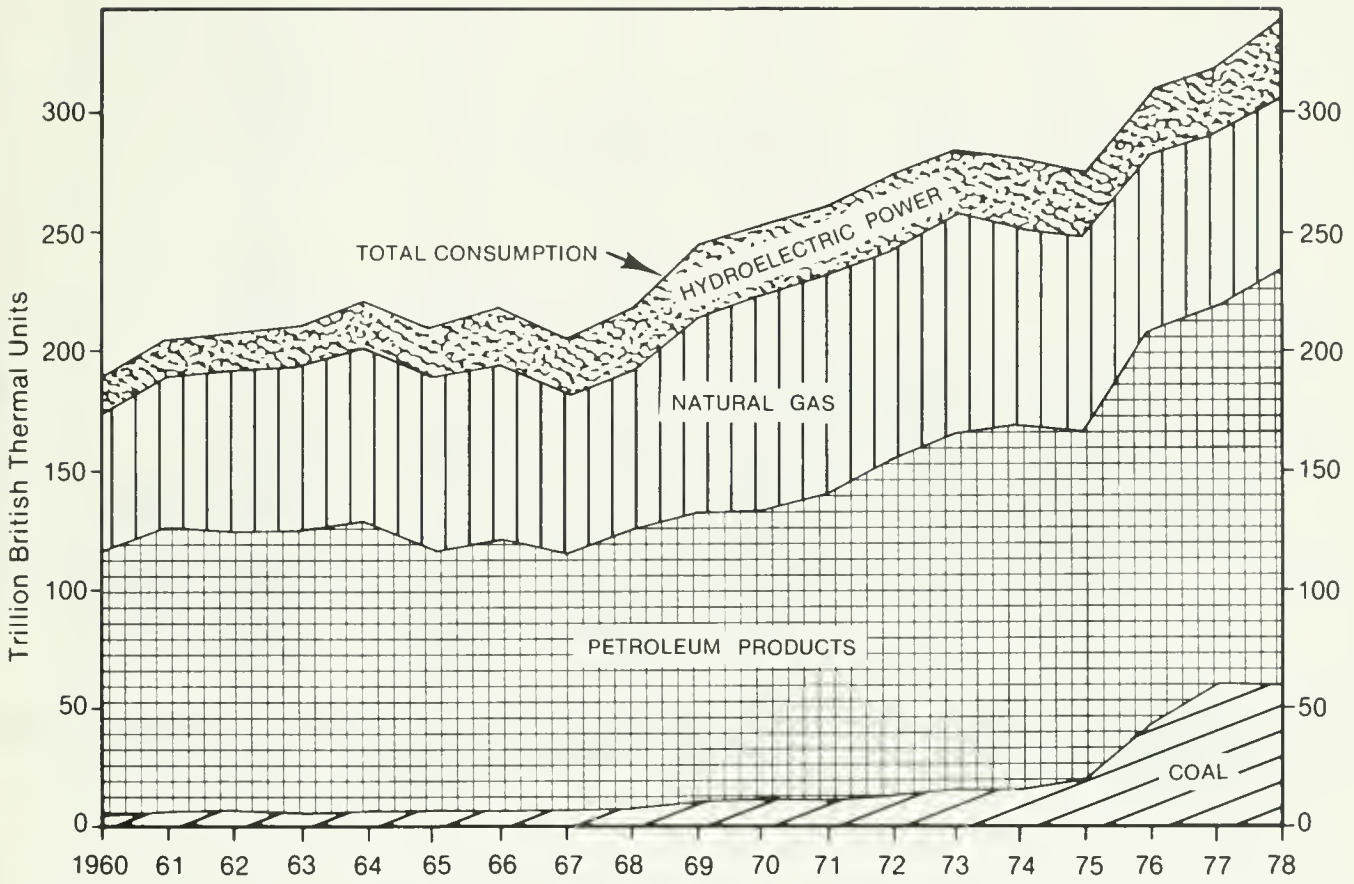

FIGURE 1.4 CONSUMPTION OF ENERGY IN MONTANA BY TYPE OF FUEL, 1960-78

NOTE: Wood and waste products used to generate electricity at electric utilities are not shown because their contribution is too small to be visible on the scale used.

SOURCE: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report: Statistical Tables and Technical Documentation, 1960 through 1978* (EIA-0214 (78)).

TABLE 1.5
CONSUMPTION OF ENERGY IN MONTANA BY SECTOR, 1960-78
(trillion Btu)

Year	Residential	Commercial	Industrial	Transportation	TOTAL
1960	31.430	35.050	67.759	56.409	**190.648**
1961	33.457	39.553	74.181	58.501	**205.692**
1962	33.494	37.156	77.328	59.463	**207.441**
1963	33.152	37.949	82.403	57.410	**210.914**
1964	37.603	38.004	87.675	57.211	**220.493**
1965	36.218	37.767	79.615	57.190	**210.790**
1966	36.470	32.526	87.346	62.146	**218.488**
1967	37.493	33.875	77.472	56.971	**205.811**
1968	39.131	33.676	83.876	61.910	**218.593**
1969	42.435	35.931	99.877	66.476	**244.719**
1970	44.238	39.228	100.642	68.369	**252.477**
1971	45.543	38.613	106.296	71.424	**261.876**
1972	47.320	42.289	109.186	75.809	**274.604**
1973	48.580	42.036	110.235	83.384	**284.235**
1974	45.262	38.804	111.451	85.577	**281.094**
1975	48.810	41.246	103.667	81.667	**275.390**
1976	54.048	49.596	118.981	87.959	**310.584**
1977	57.223	49.509	126.114	85.314	**318.160**
1978	63.300	51.481	125.465	97.110	**337.356**

SOURCE: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report: Statistical Tables and Technical Documentation, 1960 through 1978* (EIA-0214(78)). (Revised as indicated on page vi.)

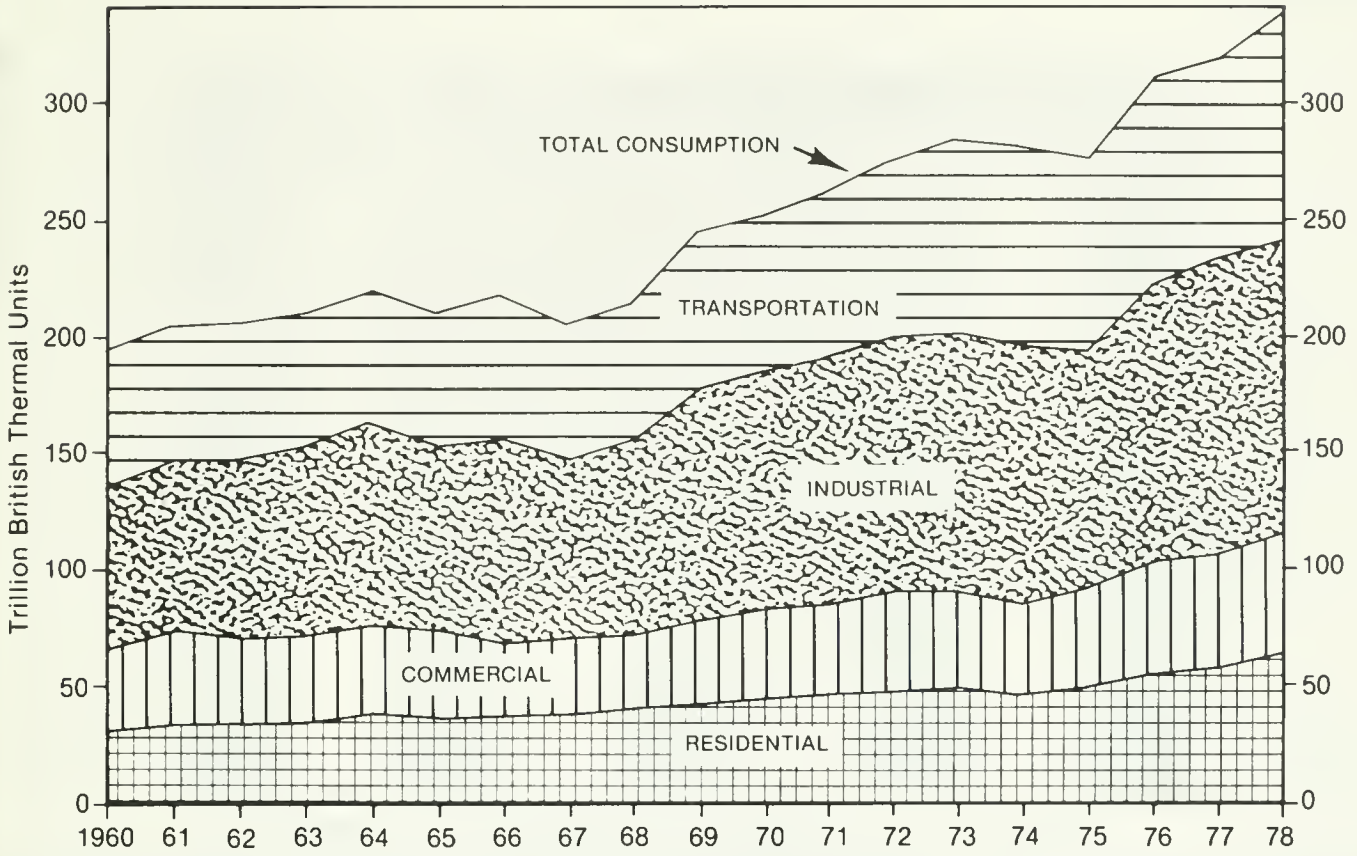

FIGURE 1.5 CONSUMPTION OF ENERGY IN MONTANA BY SECTOR, 1960-78

SOURCE: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report: Statistical Tables and Technical Documentation, 1960 through 1978* (EIA-0214 (78)).

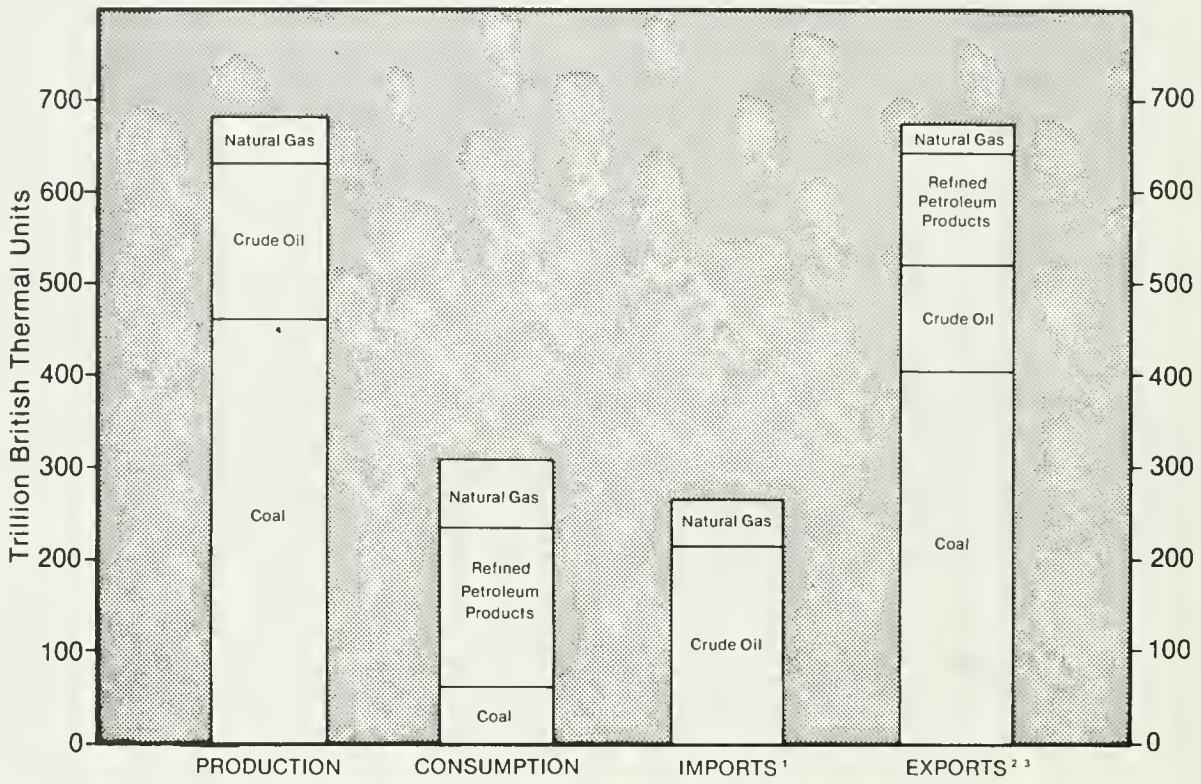

FIGURE 1.6 PRODUCTION, CONSUMPTION, IMPORTS AND EXPORTS OF FOSSIL FUELS IN MONTANA IN 1978

[1]In 1978, Montana imported 186 tons of coal, 170 of these tons from Wyoming. This accounted for approximately 0.003 trillion Btu and is not shown because its size is insignificant relative to the scale of the chart.
[2]Coal figures include a small amount of coal produced in Washington, Oregon, and Alaska.
[3]Refined petroleum products are shown as **net** exports.

SOURCES: Coal Production: Montana Department of Labor and Industry, Workers' Compensation Division, Safety and Health Bureau; U.S. Department of Energy.

Consumption: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report: Statistical Tables and Technical Documentation, 1960 through 1978* (EIA-0214 (78)).

Coal Imports and Consumption: U.S. Department of Energy, Energy Information Administration, various titles including *Coal—Bituminous and Lignite; Bituminous Coal and Lignite Distribution; Bituminous and Subbituminous Coal and Lignite Distribution* (summary reports for 1978).

Natural Gas and Crude Oil Production, Imports and Exports: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1978.

Refined Petroleum Products Imports: Husky Pipeline in Billings.

Refined Petroleum Products Exports: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1978; U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics*, 1978; U.S. Department of Energy, Energy Information Administration, *Sales of Liquefied Petroleum Gases and Ethane*, 1978 (EIA-0114(78)), and *Sales of Fuel Oil and Kerosine*, 1978 (EIA-0113(78)).

2

ELECTRICITY

HIGHLIGHTS

- Total electric generating capacity in Montana is 3,320 megawatts, of which two-thirds is hydroelectric generating capacity.
- Hydroelectric and fossil fuel plants generated 15.8 billion kWh of electricity in 1979, down 6 percent from the record high generation of 16.8 billion kWh in 1978.
- Montana's coal-fired plants produced 5.1 billion kWh of electricity in 1979, up only slightly from the previous year.
- Electric utilities sold 11.1 billion kWh in Montana during 1979. Residential customers paid an average of 2.67 cents per kWh; commercial customers paid an average of 2.52 cents per kWh, and industrial customers, an average of 0.80 cents per kWh.

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TABLE 2.1
ELECTRIC POWER PLANTS IN MONTANA BY PRIMARY FUEL
DECEMBER 1979

HYDROELECTRIC PLANTS

Owner	Plant	County	Date of Operation (First Unit)	GENERATION[2] Nameplate Capacity (megawatts)	GENERATION[2] Critical Water Year (average megawatts)	GENERATION[2] Median Water Year (average megawatts)
Montana Light & Power Co	Lake Creek	Lincoln	1916	5.0	2 3	2 8
Montana Power Company	Black Eagle	Cascade	1927	18 0		
Montana Power Company	Cochrane	Cascade	1958	48 0		
Montana Power Company	Flint Creek	Granite	1901	2 0		
Montana Power Company	Hauser Lake	Lewis & Clark	1907	18 0		
Montana Power Company	Holter	Lewis & Clark	1918	40 0		
Montana Power Company	Kerr	Lake	1938	168 0	337 0	385.0
Montana Power Company	Milltown	Missoula	1906	5 0		
Montana Power Company	Morony	Cascade	1930	46 0		
Montana Power Company	Mystic Lake	Stillwater	1925	10 0		
Montana Power Company	Rainbow	Cascade	1910	36 0		
Montana Power Company	Ryan	Cascade	1915	48 0		
Montana Power Company	Thompson Falls	Sanders	1915	30 0		
Montana Power Company	Madison	Madison	1906	8.0		
Pacific Power & Light Co	Big Fork	Flathead	1910	4 0	3.0	3 5
U.S Army Corps of Engineers	Libby	Lincoln	1975	420 0	180.0	220 0
U S Army Corps of Engineers	Fort Peck	McCone	1943	165 0	94 2	128 2
U.S Bureau of Indian Affairs Flathead Irrigation Project	Big Creek	Lake	1928	0 4	not significant	not significant
U.S Water & Power Resources Services[1]	Canyon Ferry	Lewis & Clark	1953	51 0	24 7	43 0
U S Water & Power Resources Services[1]	Yellowtail	Big Horn	1966	252 0	79.9	117 0
U S Water & Power Resources Services[1]	Hungry Horse	Flathead	1952	285.0	105.0	216 9
Washington Water Power Co	Noxon Rapids	Sanders	1959	555 0	154 8	191 0
TOTAL HYDROELECTRIC GENERATION				**2,214.4**	**980.9**	**1,307.4**

[1]U.S. Department of the Interior, Water & Power Resources Services (formerly U.S. Bureau of Reclamation).
[2]Critical water year, median water year, and average generation figures supplied by the plants' owners.

TABLE 2.1 (continued)
ELECTRIC POWER PLANTS IN MONTANA BY PRIMARY FUEL
DECEMBER 1979

FOSSIL FUEL FIRED PLANTS

Owner	Plant	County	Date of Operation (First Unit)	GENERATION[2] Nameplate Capacity (megawatts)	GENERATION[2] Average (average megawatts)	Fuel
Montana-Dakota Utilities	Glendive	Dawson	1926	7.0	0.0	natural gas
Montana-Dakota Utilities	Glendive	Dawson	1979	30.0	0.0	oil
Montana-Dakota Utilities	Miles City	Custer	1972	23.0	2.1	natural gas
Montana-Dakota Utilities	Lewis & Clark	Richland	1958	50.0	34.2	lignite
Montana Power Company	Frank Bird	Yellowstone	1951	69.0	60.0	oil
Montana Power Company	J. E. Corette	Yellowstone	1968	173.0	139.0	coal
Montana Power Co. and Pudget Sound Power & Light	Colstrip I	Rosebud	1975	358.0	270.0	coal
Montana Power Co. and Pudget Sound Power & Light	Costrip II	Rosebud	1976	358.0	270.0	coal
Pacific Power and Light	Libby	Lincoln	1972	24.0	0.0	#2 fuel oil
TOTAL FOSSIL FUEL FIRED GENERATION				**1,092.0**	**775.3**	

OTHER PLANTS

Owner	Plant	County	Date of Operation (First Unit)	GENERATION[2] Nameplate Capacity (megawatts)	GENERATION[2] Average (average megawatts)	Fuel
Montana Light & Power[3]	Libby	Lincoln	1939	14.0	7.8	wood & waste products
TOTAL GENERATION FOR OTHER PLANTS				**14.0**	**7.8**	

TOTAL MONTANA NAMEPLATE GENERATING CAPACITY 3,320.4 megawatts
TOTAL MONTANA GENERATION, CRITICAL WATER YEAR 1,764.0 average megawatts
TOTAL MONTANA GENERATION, MEDIAN WATER YEAR 2,090.5 average megawatts

NOTE: 1 average megawatt = 8,760 megawatt-hours

[2]Critical water year, median water year, and average generation figures supplied by the plants' owners.
[3]Generation is largely for in-plant use at St. Regis Lumber Company. Average generation is for 1979 only.

SOURCE: U.S. Department of Energy, Energy Information Administration, *Inventory of Power Plants in the United States, December 1979* (EIA-0095 (79)), supplemented by information obtained directly from the plants' owners.

TABLE 2.2
ANNUAL GENERATION[1] OF ELECTRICITY IN MONTANA, 1950-79

Year	TOTAL	HYDROELECTRIC		COAL		OIL		GAS		GEOTHERMAL, WOOD & WASTE	
		Million kWh Generated	% of State Total	Million kWh Generated	% of State Total	Million kWh Generated	% of State Total	Million kWh Generated	% of State Total	Million kWh Generated	% of State Total
1950	**3,136**	3,107	99	NA		NA		NA		NA	
1951	**3,304**	3,259	99	NA		NA		NA		NA	
1952	**3,778**	3,464	92	NA		NA		NA		NA	
1953	**3,719**	3,424	92	NA		NA		NA		NA	
1954	**4,274**	4,246	99	NA		NA		NA		NA	
1955	**4,696**	4,679	99	NA		NA		NA		NA	
1956	**5,495**	5,459	99	NA		NA		NA		NA	
1957	**5,215**	4,969	95	NA		NA		NA		NA	
1958	**4,551**	4,224	93	NA		NA		NA		NA	
1959	**4,934**	4,720	96	NA		NA		NA		NA	
1960	**5,992**	5,801	97	NA		NA		NA		NA	
1961	**6,780**	6,499	96	263	4	0	0	19		0	0
1962	**7,051**	6,410	91	291	4	1	[2]	349	5	0	0
1963	**6,594**	6,011	91	284	4	0	0	299	5	0	0
1964	**7,360**	6,821	93	286	4	2	[2]	220	3	31	[2]
1965	**8,882**	8,389	94	285	3	0	0	171	2	37	[2]
1966	**8,611**	7,940	92	317	4	43	[2]	273	3	38	[2]
1967	**9,117**	8,703	95	314	3	3	[2]	41	[2]	56	1
1968	**9,495**	8,925	94	434	5	10	[2]	52	[2]	74	1
1969	**10,442**	9,447	90	735	7	52	[2]	147	1	61	1
1970	**10,026**	8,745	87	966	10	14	[2]	228	2	73	1
1971	**10,653**	9,595	90	901	8	1	[2]	96	1	60	1
1972	**10,689**	9,444	88	1,079	10	7	[2]	108	1	50	[2]
1973	**9,132**	7,517	82	1,303	14	69	[2]	195	2	48	1
1974	**11,056**	9,726	88	1,210	11	6	[2]	98	1	16	[2]
1975	**11,231**	9,560	85	1,544	14	17	[2]	96	1	14	[2]
1976	**16,091**	12,402	77	3,558	22	27	[2]	67	[2]	37	[2]
1977	**13,473**	8,460	63	4,788	36	92	1	87	1	46	[2]
1978	**16,750**	11,708	70	4,871	29	35	[2]	84	[2]	52	[2]
1979	**15,756**	10,344	66	5,114	32	58	[2]	188	1	52	[2]

[1]Electrical generation data represent only that power generated by public utilities and do not include self-generated industrial electrical power.
[2]Less than or equal to 0.5%

SOURCES: Federal Power Commission (1950-76); U.S. Department of Energy, Energy Information Administration, *Power Production, Fuel Consumption and Installed Capacity Data*, annual reports for 1977-79 (EIA-0049).

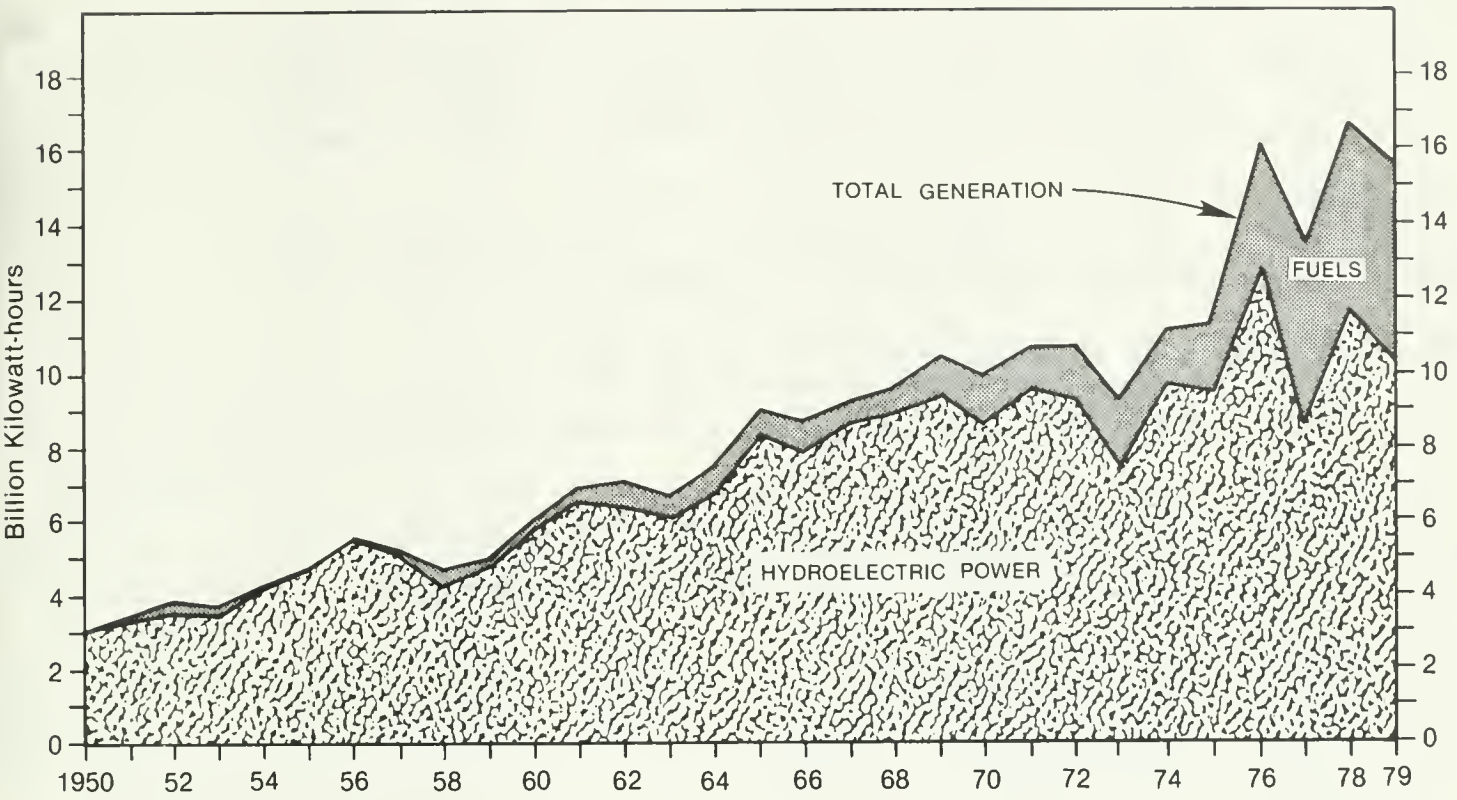

FIGURE 2.1 ANNUAL GENERATION OF ELECTRICITY IN MONTANA, 1950-79

SOURCE: Federal Power Commission (1950-76); U.S. Department of Energy, Energy Information Administration, *Power Production, Fuel Consumption and Installed Capacity Data*, annual reports for 1977-79 (EIA-0049).

TABLE 2.3
MONTHLY SALES OF ELECTRICITY TO ULTIMATE CONSUMERS, 1960-80
(thousand kilowatt-hours)

Year	Sector	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL
1960	Residential	87,817	86,156	86,172	78,700	74,016	71,708	69,122	70,021	72,281	72,788	78,160	88,423	935,364
	Commercial	40,851	40,920	40,693	37,987	38,233	37,677	37,542	39,941	40,747	39,473	40,556	44,419	479,039
	Industrial	192,702	206,245	262,319	263,102	267,841	261,080	249,175	250,586	249,098	255,737	243,306	250,196	2,951,387
	Other	15,930	16,460	17,522	17,095	16,958	16,398	16,005	19,356	18,150	18,847	17,586	18,413	208,720
	TOTAL	**337,300**	**349,781**	**406,706**	**396,884**	**397,048**	**386,863**	**371,844**	**379,904**	**380,276**	**386,845**	**379,608**	**401,451**	**4,574,510**
1961	Residential	94,714	89,265	82,793	79,128	78,238	75,587	72,428	72,221	77,654	79,289	83,809	96,727	981,853
	Commercial	43,745	44,111	40,965	40,209	40,766	43,527	42,932	42,376	45,316	41,664	44,097	48,062	517,770
	Industrial	245,523	222,879	241,307	239,366	255,179	250,378	254,137	249,779	237,969	252,472	254,771	271,577	2,975,337
	Other	17,447	17,069	18,282	16,729	17,031	17,904	18,566	21,490	20,826	18,835	18,577	19,636	222,392
	TOTAL	**401,429**	**373,324**	**383,347**	**375,432**	**391,214**	**387,396**	**388,063**	**385,866**	**381,765**	**392,260**	**401,254**	**436,002**	**4,697,352**
1962	Residential	103,908	101,586	94,433	87,906	78,729	80,367	75,441	75,490	79,620	80,599	86,901	96,516	1,041,496
	Commercial	48,422	48,102	45,271	44,031	43,209	43,721	44,099	45,949	45,939	44,353	47,717	49,951	550,764
	Industrial	270,801	243,237	277,876	277,380	283,922	271,608	244,388	238,120	228,811	252,574	249,926	260,819	3,099,462
	Other	19,118	18,525	21,089	21,697	19,619	19,238	20,484	23,301	22,951	23,013	21,460	23,893	254,388
	TOTAL	**442,249**	**411,450**	**438,669**	**431,014**	**425,479**	**414,934**	**384,412**	**382,860**	**377,321**	**400,539**	**406,004**	**431,179**	**4,946,110**
1963	Residential	103,835	110,481	94,644	86,648	85,447	81,989	79,996	80,482	82,349	82,375	87,151	102,086	1,077,483
	Commercial	49,276	50,336	46,788	46,194	45,541	46,639	47,013	48,163	48,917	46,782	47,620	50,646	573,915
	Industrial	263,088	244,329	269,286	260,528	257,708	252,494	254,657	265,693	263,189	279,350	279,286	301,282	3,190,890
	Other	22,146	22,082	22,755	21,353	21,007	20,379	19,564	24,581	22,728	21,934	19,814	20,273	258,616
	TOTAL	**438,345**	**427,228**	**433,473**	**414,723**	**409,703**	**401,501**	**401,230**	**418,919**	**417,183**	**430,441**	**433,871**	**474,287**	**5,100,904**
1964	Residential	113,972	104,130	99,613	98,215	90,238	83,836	83,917	85,367	86,431	89,147	93,850	109,881	1,138,597
	Commercial	53,376	52,679	50,467	49,839	48,678	47,549	48,107	52,939	50,029	49,286	52,242	54,615	609,806
	Industrial	269,594	278,635	307,385	287,199	310,487	305,908	295,793	296,836	299,569	307,596	299,974	284,944	3,543,920
	Other	21,883	22,113	21,961	20,066	20,042	19,200	19,516	22,078	17,852	21,559	20,456	21,846	248,572
	TOTAL	**458,825**	**457,557**	**479,426**	**455,319**	**469,445**	**456,493**	**447,333**	**457,220**	**453,881**	**467,588**	**466,522**	**471,286**	**5,540,895**
1965	Residential	129,757	113,046	107,890	106,939	94,738	90,005	87,104	89,052	92,750	97,290	96,245	111,332	1,216,148
	Commercial	58,183	55,780	53,569	54,060	53,351	50,867	51,996	56,258	54,504	54,215	54,487	57,001	654,271
	Industrial	295,828	283,795	302,647	308,369	315,466	328,079	292,282	310,484	365,742	379,338	377,321	380,099	3,939,450
	Other	23,186	23,626	23,660	22,740	22,635	20,825	21,123	23,415	20,177	22,706	22,808	23,594	270,495
	TOTAL	**506,954**	**476,247**	**487,766**	**492,108**	**486,190**	**489,776**	**452,505**	**479,209**	**533,173**	**553,549**	**550,861**	**572,026**	**6,080,364**
1966	Residential	121,350	124,626	113,653	103,495	99,313	93,596	91,931	93,336	96,337	96,360	105,035	122,301	1,261,333
	Commercial	58,913	60,674	57,259	55,579	55,861	55,136	57,741	59,368	59,127	58,393	59,464	60,268	697,783
	Industrial	387,237	351,127	381,773	375,749	384,072	376,720	381,588	391,139	394,768	398,414	405,337	429,369	4,657,293
	Other	24,598	25,287	26,810	24,087	23,293	21,871	22,643	24,784	21,636	24,241	22,453	24,169	285,872
	TOTAL	**592,098**	**561,714**	**579,495**	**558,910**	**562,539**	**547,323**	**553,903**	**568,627**	**571,868**	**577,408**	**592,289**	**636,107**	**6,902,281**
1967	Residential	126,433	118,444	114,427	111,864	102,479	98,793	96,131	93,841	99,771	97,523	107,138	123,724	1,290,568
	Commercial	63,164	62,283	60,029	59,857	58,476	58,722	59,151	62,878	65,324	69,143	62,491	64,956	746,474
	Industrial	399,328	371,653	396,090	389,956	414,910	409,363	349,729	306,514	311,801	313,395	304,872	314,563	4,282,174
	Other	24,113	25,248	26,258	25,110	23,481	23,089	23,918	25,814	22,892	24,081	24,225	24,479	292,978
	TOTAL	**613,038**	**577,628**	**596,804**	**586,787**	**599,346**	**589,967**	**528,929**	**489,047**	**499,788**	**504,142**	**498,726**	**527,992**	**6,612,194**
1968	Residential	143,663	132,768	121,232	108,338	106,581	104,089	100,963	103,557	102,645	105,823	114,265	129,362	1,373,286
	Commercial	71,463	67,767	65,410	61,562	63,963	65,534	62,364	67,865	66,533	72,710	68,798	71,000	804,969
	Industrial	349,224	301,692	313,222	359,362	415,545	412,147	410,516	463,261	453,171	470,785	514,629	518,356	4,981,910
	Other	26,187	27,093	27,845	22,534	21,925	21,883	20,467	23,614	19,135	21,451	20,882	19,966	272,982
	TOTAL	**590,537**	**529,320**	**527,709**	**551,796**	**608,014**	**603,653**	**594,310**	**658,297**	**641,484**	**670,769**	**718,574**	**738,684**	**7,433,147**
1969	Residential	152,981	157,716	137,080	120,995	107,597	107,005	106,310	107,962	110,372	109,020	123,285	121,922	1,462,245
	Commercial	73,626	79,263	69,229	68,222	67,227	67,699	67,513	72,415	73,330	78,114	71,722	75,036	863,396
	Industrial	523,416	499,814	517,631	515,532	524,633	515,044	509,530	520,316	490,956	517,126	543,581	530,666	6,208,245
	Other	20,957	23,362	24,550	21,783	21,110	20,894	17,922	19,890	18,498	19,675	19,626	18,842	247,109
	TOTAL	**770,980**	**760,155**	**748,490**	**726,532**	**720,567**	**710,642**	**701,275**	**720,583**	**693,156**	**723,935**	**758,214**	**746,466**	**8,780,995**

TABLE 2.3 (continued)
MONTHLY SALES OF ELECTRICITY TO ULTIMATE CONSUMERS, 1960-80
(thousand kilowatt-hours)

Year	Sector	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL
1970	Residential	152,800	147,131	130,734	126,382	120,747	111,014	111,686	117,988	117,328	120,147	129,342	148,732	1,534,031
	Commercial	78,481	78,370	72,151	72,549	72,646	70,889	74,235	80,235	79,091	87,240	77,183	80,540	923,610
	Industrial	535,198	507,080	517,064	521,683	524,102	499,228	509,589	489,343	464,671	493,165	497,404	470,212	6,028,739
	Other	20,146	22,016	24,030	22,554	22,192	22,161	24,076	24,744	20,763	20,118	21,019	19,914	263,733
	TOTAL	**786,625**	**754,597**	**743,979**	**743,168**	**739,687**	**703,292**	**719,586**	**712,310**	**681,853**	**720,670**	**724,948**	**719,398**	**8,750,113**
1971	Residential	171,644	157,263	138,901	135,619	123,858	117,446	118,165	122,788	129,015	124,349	136,480	157,000	1,632,528
	Commercial	87,202	83,537	78,458	78,899	78,903	76,350	78,401	82,514	85,580	92,637	80,452	86,892	989,825
	Industrial	512,277	490,144	496,830	510,798	528,034	528,014	454,859	428,468	378,792	519,353	551,435	600,152	5,999,156
	Other	21,318	22,036	21,285	23,467	23,067	21,581	22,505	24,363	21,012	21,838	22,599	23,406	268,477
	TOTAL	**792,441**	**752,980**	**735,474**	**748,783**	**753,862**	**743,391**	**673,930**	**658,133**	**614,399**	**758,177**	**790,966**	**867,450**	**8,889,986**
1972	Residential	196,308	174,977	159,083	139,973	129,697	129,433	126,990	125,023	134,719	131,454	146,473	174,196	1,768,326
	Commercial	99,573	98,759	85,723	82,667	80,349	85,918	84,421	84,408	91,807	91,910	87,636	96,428	1,069,599
	Industrial	383,841	367,497	547,387	532,198	531,324	484,725	494,943	480,897	475,312	492,458	470,817	398,909	5,660,308
	Other	22,537	21,683	23,962	22,315	22,021	22,468	20,535	22,039	21,171	21,633	21,567	22,610	264,541
	TOTAL	**702,259**	**662,916**	**816,155**	**777,153**	**763,391**	**722,544**	**726,889**	**712,367**	**723,009**	**737,455**	**726,493**	**692,143**	**8,762,774**
1973	Residential	196,308	174,977	155,431	145,404	136,810	131,440	134,731	138,222	142,991	134,836	151,242	169,992	1,812,384
	Commercial	99,573	98,759	91,616	89,892	88,813	89,850	94,218	99,168	98,973	89,397	92,215	92,810	1,125,284
	Industrial	383,841	367,497	429,807	429,508	391,416	370,707	384,180	428,935	434,784	466,258	478,403	468,563	5,033,899
	Other	22,537	21,683	22,045	21,664	21,123	20,615	20,508	20,327	18,181	18,956	18,528	19,528	245,695
	TOTAL	**702,259**	**662,916**	**698,899**	**686,468**	**638,162**	**612,612**	**633,637**	**686,652**	**694,929**	**709,447**	**740,388**	**750,893**	**8,217,262**
1974	Residential	185,102	178,463	154,353	152,674	139,598	142,545	146,882	156,208	145,167	141,631	154,677	175,550	1,872,850
	Commercial	98,697	97,157	90,171	91,900	86,088	91,539	98,340	104,597	96,879	103,383	95,650	102,055	1,156,456
	Industrial	492,483	491,482	504,374	447,331	439,410	450,886	507,271	511,013	504,551	545,501	546,527	487,813	5,928,642
	Other	20,837	21,098	21,008	19,541	19,077	17,505	16,576	16,611	14,336	16,962	13,771	15,859	213,181
	TOTAL	**797,119**	**788,200**	**769,906**	**711,446**	**684,173**	**702,475**	**769,069**	**788,429**	**760,933**	**807,477**	**810,625**	**781,277**	**9,171,129**
1975	Residential	197,113	197,400	185,873	172,523	162,091	150,032	154,294	164,663	160,058	144,833	170,283	198,560	2,057,723
	Commercial	106,850	109,601	105,285	97,526	100,689	97,171	102,615	110,064	103,845	116,764	102,254	97,590	1,250,254
	Industrial	502,334	468,418	444,306	423,351	420,191	394,480	391,641	384,746	402,479	413,633	438,613	385,277	5,069,469
	Other	16,027	16,803	16,816	15,749	15,943	17,103	16,433	17,883	15,282	16,100	16,484	16,730	197,353
	TOTAL	**822,324**	**792,222**	**752,280**	**709,149**	**698,914**	**658,786**	**664,983**	**677,356**	**681,664**	**691,330**	**727,634**	**698,157**	**8,574,799**
1976	Residential	241,286	224,354	215,650	188,027	172,354	155,076	159,897	163,718	163,180	161,084	188,024	227,972	2,260,622
	Commercial	135,656	120,033	138,292	125,658	117,737	118,578	123,076	127,036	127,802	123,816	128,418	139,325	1,525,427
	Industrial	430,307	417,454	418,118	422,976	475,160	524,969	536,980	509,190	242,368	534,606	553,161	536,896	5,602,185
	Other	18,228	18,619	17,927	17,454	17,249	16,683	15,884	31,570	347	15,931	16,427	16,754	203,073
	TOTAL	**825,477**	**780,460**	**789,987**	**754,115**	**782,500**	**815,306**	**835,837**	**831,514**	**533,697**	**835,437**	**886,030**	**920,947**	**9,591,307**
1977	Residential	253,749	258,803	217,115	212,474	182,513	171,838	162,720	166,556	174,463	179,015	196,996	263,448	2,439,690
	Commercial	140,085	147,674	134,726	133,308	127,309	129,217	129,935	136,898	137,011	129,616	129,696	149,868	1,625,343
	Industrial	554,502	506,893	503,940	501,779	477,528	458,817	452,227	444,899	460,422	451,969	480,088	466,145	5,759,209
	Other	17,478	17,568	16,518	15,764	15,859	15,444	15,119	14,947	14,773	14,735	14,955	15,918	189,078
	TOTAL	**965,814**	**930,938**	**872,299**	**863,325**	**803,209**	**775,316**	**760,001**	**763,300**	**786,669**	**775,335**	**821,735**	**895,379**	**10,013,320**
1978	Residential	303,487	304,192	273,393	225,954	203,167	186,810	176,290	174,003	179,267	185,936	212,693	312,547	2,737,739
	Commercial	156,693	159,381	153,436	142,065	132,248	133,658	141,128	141,397	145,453	138,251	144,122	172,000	1,759,832
	Industrial	500,632	493,841	510,198	500,102	482,065	488,834	518,796	513,508	531,311	524,655	516,905	527,030	6,107,877
	Other	16,742	17,803	17,714	16,386	15,924	14,134	15,197	14,456	14,868	14,481	14,955	16,231	188,891
	TOTAL	**977,554**	**975,217**	**954,741**	**884,507**	**833,404**	**823,436**	**851,411**	**843,364**	**870,899**	**863,323**	**888,675**	**1,027,808**	**10,794,339**
1979	Residential	365,184	370,428	307,256	247,147	228,287	195,000	186,000	187,000	191,000	186,000	214,000	288,000	2,964,000
	Commercial	179,217	182,143	168,278	148,601	148,399	146,000	152,000	158,000	158,000	150,000	148,000	171,000	1,909,000
	Industrial	508,841	458,727	501,042	492,078	503,004	522,000	537,000	512,000	518,000	529,000	518,000	512,000	6,112,000
	Other	13,847	14,784	14,600	13,376	13,451	13,000	13,000	12,000	12,000	12,000	11,000	11,000	154,000
	TOTAL	**1,067,089**	**1,026,082**	**991,176**	**901,202**	**893,141**	**876,000**	**889,000**	**870,000**	**879,000**	**877,000**	**891,000**	**981,000**	**11,141,000**

TABLE 2.3 (continued)
MONTHLY SALES OF ELECTRICITY TO ULTIMATE CONSUMERS, 1960-80
(thousand kilowatt-hours)

Year	Sector	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL
1980	Residential	312,000	329,000	306,000	264,000	217,000	204,000	187,000	192,000	192,000				
	Commercial	174,000	179,000	176,000	159,000	157,000	153,000	153,000	163,000	155,000				
	Industrial	533,000	517,000	524,000	516,000	506,000	480,000	456,000	461,000	449,000				
	Other	12,000	12,000	13,000	11,000	11,000	11,000	11,000	11,000	11,000				
	TOTAL	**1,031,000**	**1,037,000**	**1,019,000**	**951,000**	**891,000**	**848,000**	**808,000**	**828,000**	**808,000**				

NOTE: In June 1979, DOE changed from reporting in thousands of kilowatt-hours to reporting in millions of kilowatt-hours. Accordingly, beginning in 1979, total annual figures are computed from figures rounded to the nearest million kilowatt-hours.

SOURCES: Federal Power Commission (1960-76); U.S. Department of Energy, Energy Information Administration, *Electric Power Statistics*, monthly reports for 1977-78, (EIA-0034); U.S. Department of Energy, Energy Information Administration, *Financial Statistics of Electric Utilities and Interstate Natural Gas Pipeline Companies*, monthly reports for 1979 through February 1980, (EIA-0147); U.S. Department of Energy, Energy Information Administration, *Sales, Revenue, and Income of Electric Utilities*, monthly reports for March 1980 through September 1980 (EIA-0147).

TABLE 2.4
ANNUAL SALES OF ELECTRICITY BY SECTOR, 1950-79
(million kilowatt-hours)

Year	TOTAL SALES	Residential	Commercial	Industrial	Street & Highway Lighting	Other Public Sales	Railroads	Inter-departmental
1950	**2,351**	378	219	1,559	16	15	154	11
1951	**2,437**	423	238	1,566	18	19	164	10
1952	**2,699**	484	256	1,757	20	17	159	6
1953	**3,002**	501	302	1,987	20	33	154	5
1954	**2,772**	562	351	1,649	24	33	145	8
1955	**3,658**	643	389	2,407	25	34	154	6
1956	**4,666**	720	416	3,309	26	37	153	5
1957	**4,418**	782	462	2,975	28	40	127	4
1958	**4,268**	810	474	2,796	29	43	108	8
1959	**4,074**	893	512	2,468	30	55	99	17
1960	**4,617**	935	529	2,973	33	52	89	6
1961	**4,774**	953	603	3,028	33	69	83	5
1962	**5,044**	1,024	652	3,152	36	82	91	7
1963	**5,192**	1,055	715	3,190	36	102	88	6
1964	**5,647**	1,117	772	3,534	39	105	75	5
1965	**6,228**	1,172	846	3,965	40	114	85	6
1966	**7,076**	1,207	894	4,718	43	121	88	6
1967	**6,866**	1,310	936	4,338	43	144	82	13
1968	**7,741**	1,385	1,027	5,055	47	140	69	18
1969	**9,152**	1,469	1,117	6,316	51	123	57	19
1970	**9,091**	1,521	1,188	6,120	52	117	73	20
1971	**9,214**	1,614	1,254	6,079	53	113	80	21
1972	**9,191**	1,710	1,325	5,888	53	113	81	21
1973	**8,572**	1,852	1,447	5,031	55	117	52	18
1974	**9,540**	1,877	1,488	5,963	57	113	23	19
1975	**8,867**	2,038	1,544	5,089	64	113	--	19
1976	**9,891**	2,232	1,669	5,795	60	115	--	20
1977	**10,036**	2,433	2,225	5,195	60	101	--	22
1978	**10,748**	2,667	1,930	5,953	60	104	--	24
1979	**11,066**	2,868	2,062	5,945	61	107	--	23

SOURCE: Edison Electric Institute, *Statistical Yearbook of the Electric Utility Industry*, 1950-79.

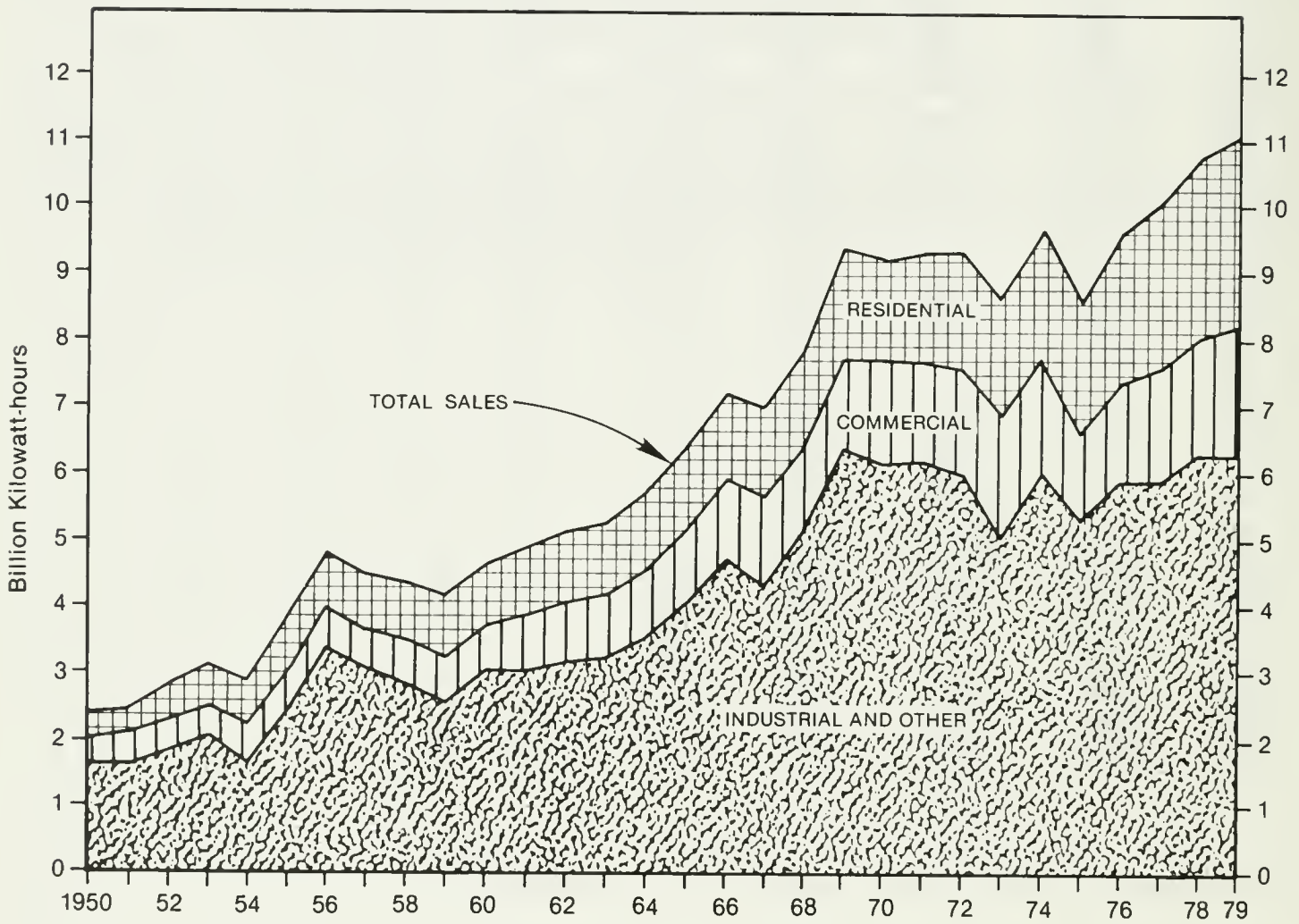

FIGURE 2.2 ANNUAL SALES OF ELECTRICITY IN MONTANA, 1950-79

SOURCE: Federal Power Commission (1950-76); U.S. Department of Energy, Energy Information Administration, *Electric Power Statistics*, monthly reports for 1977-78 (EIA-0034); *Financial Statistics of Electric Utilities and Interstate Natural Gas Pipeline Companies*, monthly reports for 1979 (EIA-0147).

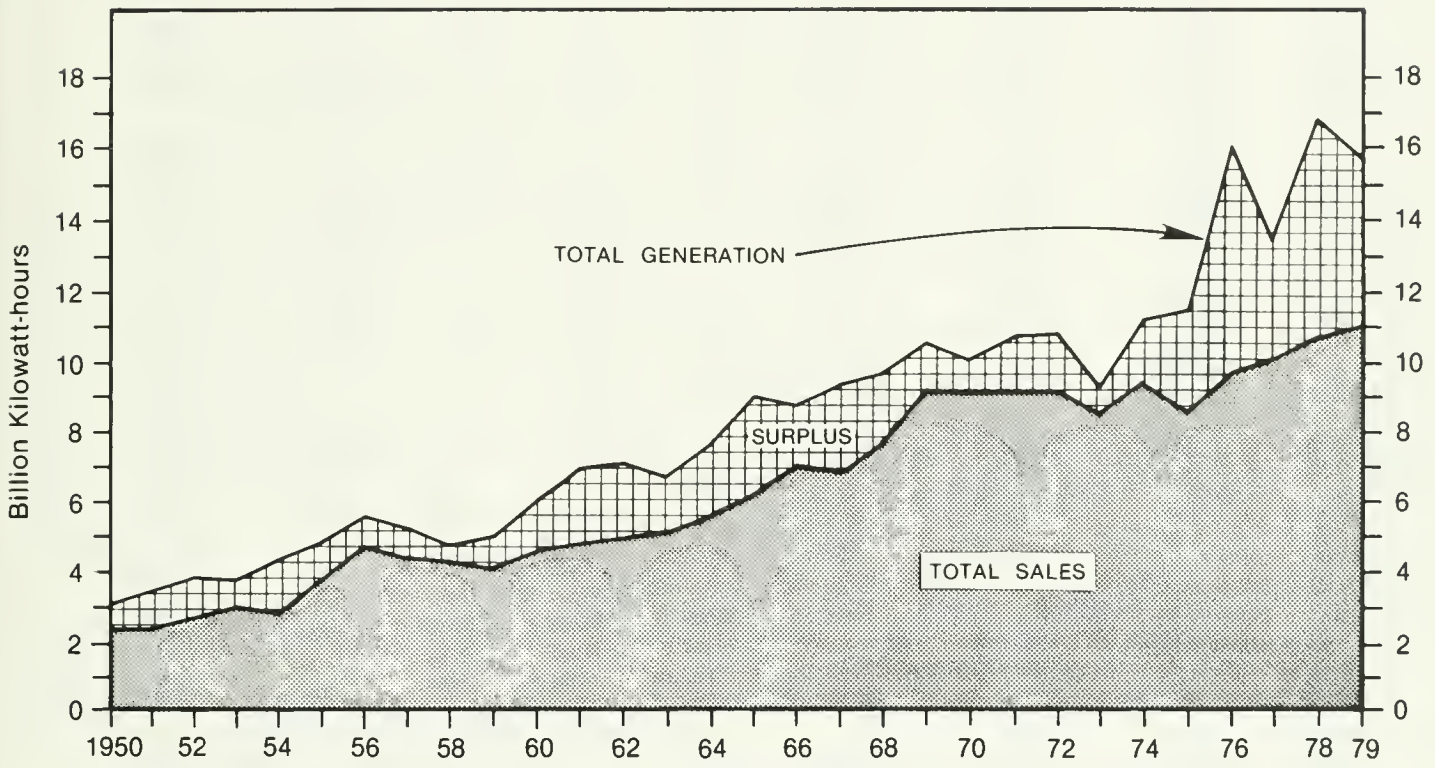

FIGURE 2.3 ANNUAL GENERATION AND SALES OF ELECTRICITY IN MONTANA, 1950-79

SOURCES: Sales: Edison Electric Institute, *Statistical Yearbook of the Electric Utility Industry*, 1950-79.

Generation: Federal Power Commission (1950-76); U.S. Department of Energy, Energy Information Administration, *Power Production, Fuel Consumption and Installed Capacity Data*, annual reports for 1977-79 (EIA-0049).

TABLE 2.5
AVERAGE ANNUAL PRICES FOR ELECTRICITY SOLD IN MONTANA, 1950-79
(cents per kilowatt-hour)

Year	TOTAL SALES	Residential	Commercial	Industrial	Street & Highway Lighting	Other Public Sales	Railroads	Inter-departmental
1950	**1.06**	2.70	2.42	0.50	2.41	0.84	0.57	0.54
1951	**1.08**	2.66	2.37	0.51	2.32	0.73	0.54	0.56
1952	**1.08**	2.60	2.39	0.50	2.28	0.80	0.54	0.82
1953	**1.03**	2.52	2.42	0.47	2.35	0.52	0.54	0.88
1954	**1.14**	2.44	2.37	0.48	2.18	0.58	0.54	0.73
1955	**0.99**	2.34	2.32	0.43	2.25	0.60	0.54	0.92
1956	**0.86**	2.34	2.17	0.38	2.32	0.65	0.55	1.10
1957	**0.93**	2.28	2.08	0.40	2.30	0.66	0.54	1.38
1958	**0.99**	2.34	2.15	0.41	2.39	0.67	0.54	0.88
1959	**1.10**	2.37	2.22	0.43	2.56	0.70	0.55	0.59
1960	**1.05**	2.33	2.25	0.43	2.45	0.79	0.56	1.27
1961	**1.06**	2.32	2.18	0.45	2.70	0.74	0.55	1.70
1962	**1.07**	2.29	2.13	0.46	2.50	0.61	0.55	1.43
1963	**1.07**	2.25	2.06	0.45	2.78	0.78	0.57	1.67
1964	**1.03**	2.20	2.02	0.45	2.56	0.71	0.53	2.00
1965	**0.98**	2.12	1.93	0.44	2.75	0.70	0.59	1.67
1966	**0.92**	2.09	1.92	0.43	2.56	0.66	0.57	1.67
1967	**0.95**	2.04	1.89	0.42	2.79	0.63	0.49	1.08
1968	**0.90**	1.99	1.83	0.40	2.77	0.61	0.58	1.11
1969	**0.88**	2.10	1.93	0.41	2.75	0.57	0.53	1.05
1970	**0.94**	2.13	1.94	0.42	2.88	0.60	0.55	1.00
1971	**0.95**	2.12	1.94	0.43	3.02	0.62	0.50	0.95
1972	**1.00**	2.16	1.98	0.44	3.21	0.53	0.49	1.19
1973	**1.16**	2.21	2.04	0.53	3.27	0.60	0.58	1.67
1974	**1.10**	2.23	2.05	0.50	3.23	0.58	0.53	1.41
1975	**1.25**	2.19	2.08	0.62	2.99	0.58	--	1.51
1976	**1.24**	2.23	2.06	0.60	3.32	0.73	--	1.67
1977	**1.38**	2.38	1.90	0.67	3.53	0.80	--	1.79
1978	**1.53**	2.62	2.50	0.72	3.88	0.87	--	2.16
1979	**1.62**	2.67	2.52	0.80	3.86	0.87	--	1.99

NOTE: Average annual prices were calculated by dividing total revenue (thousand of dollars) by total sales (millions of kilowatt-hours).

SOURCE: Edison Electric Institute, *Statistical Yearbook of the Electric Utility Industry*, 1950-79.

TABLE 2.6
INDUSTRIAL CONSUMPTION OF ELECTRICITY IN MONTANA BY STANDARD INDUSTRIAL CLASSIFICATION CODE, 1976-80
(million kilowatt-hours)

SIC CODE	INDUSTRY	1976	1977	1978	1979	1980[1]
	Mining					
10	Metal Mining	[2]	233.380	201.796	[2]	[2]
13	Crude Petroleum, Natural Gas	194.452	193.426	185.680	189.115	105.170
14	Nonmetallic Mineral Mining	44.872	49.120	53.629	53.352	28.166
	Manufacturing					
20	Food and Kindred Products	64.755	69.999	68.776	74.389	35.615
24	Lumber and Wood Products	292.440	320.798	335.447	333.245	156.538
27	Printing and Publishing	6.977	7.242	6.886	7.147	3.496
28	Chemical Products	456.759	470.337	457.470	469.238	215.788
29	Petroleum Products	289.415	356.770	331.241	379.584	168.821
32	Stone, Clay, Glass, Concrete	90.552	90.383	87.454	81.541	36.775
33	Primary Metals	3,446.846	3,595.952	3,603.122	3,560.284	1,793.970
34	Fabricated Metals	1.132	1.232	1.076	1.164	0.541
35	Non-electric Machinery	0.887	0.620	1.783	6.367	3.290
37	Transportation Equipment	1.120	1.142	1.115	1.375	0.484
All Other[3]		461.127	167.703	199.870	454.528	223.867
	TOTAL	**5,351.334**	**5,558.105**	**5,535.344**	**5,611.330**	**2,772.520**

[1]January to June only.
[2]Combined in "all other" category.
[3]SIC codes: 12 - Bituminous coal, lignite mining
16 - Construction other than building construction
25 - Furniture and fixtures
26 - Paper and allied products
31 - Leather and leather products
38 - Measuring, analyzing, and controlling instruments, etc.
are combined in "all other" to avoid disclosure of individual firms.

SOURCE: Maureen L. O'Connor, Research Department, Federal Reserve Bank of Minneapolis, personal communications.

TABLE 2.7
MONTHLY CONSUMPTION OF FUELS BY ELECTRIC UTILITIES IN MONTANA, 1960-80

Year	FUEL	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL
1960	Coal	22.6	20.0	21.3	15.2	14.2	4 8	13 5	14 7	9.1	11 9	15 7	23 9	**186.9**
	Oil	0.0	'	'	'	0.0	0 0	0.0	0.0	0.0	0 0	0.0	0.0	'
	Gas	51.1	44.0	52.8	49.0	25.8	16 7	7.7	9 2	12.1	7 3	17.1	48 5	**341.3**
1961	Coal	24 1	19 8	25.6	21.9	25.0	5 6	20.1	23 9	18.3	23 1	24 7	30.4	**262.5**
	Oil	0 0	0.0	0.0	'	0.0	0.0	0.0	0.0	0.0	0 0	0.0	0 0	'
	Gas	30.2	24.6	18.9	18.0	8 2	7.7	7 3	9.9	6.3	17.6	9 2	198 2	**356.2**
1962	Coal	29.5	25 7	29.3	23 3	26.2	11.7	21.8	23.9	19.9	26 4	23.6	30.3	**291.6**
	Oil	0.9	0.0	0.0	0 0	0.4	0.0	0.0	0.0	0.0	0 0	0.0	0.0	**1.3**
	Gas	329.0	312.4	396.4	374 2	148.1	100.7	6.7	308 7	488.0	506 3	485.2	256.8	**3,712.5**
1963	Coal	31.8	27.1	26.2	27.3	29.0	3 5	24 4	25.9	17.3	25 5	22.4	25 1	**285.5**
	Oil	0.6	0.0	0.0	0 0	'	0.0	0.0	0.0	0.0	0 0	0.0	0 0	**0.7**
	Gas	341.7	220.0	275 3	263 3	28.6	160 2	209 0	351.2	413.7	363 8	308.2	368.3	**3,303.3**
1964	Coal	21 8	19.9	25.3	21.5	24 5	28.0	25.7	23.9	18.7	24.8	26.2	33.5	**293.8**
	Oil	0 0	0.0	0 8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	**3.6**
	Gas	213.7	202.8	213.8	200.7	58.9	132.8	194.3	237 9	283.2	276.4	186.3	248 7	**2,449.5**
1965	Coal	29 4	24.4	28 2	28.6	21.1	23.0	25 5	12 3	26.6	26.0	27 2	23.5	**295.8**
	Oil	0 0	'	0.0	0.0	0 0	0.0	0.1	'	0.3	0.0	0 0	0.2	**0.7**
	Gas	199.3	176.8	187.6	173.0	5.7	115.8	163 6	179.4	185.4	185.2	191 6	228.9	**1,992.3**
1966	Coal	31 9	29.5	24 8	27 4	30.3	27.0	29 1	12.8	25.1	28 7	27.8	29 1	**323.5**
	Oil	0.5	0.0	1.3	0.4	0.3	0.1	3.3	24 0	20.8	20 9	10.6	0.0	**82.2**
	Gas	225.9	192.0	209 7	189 3	217.9	161.0	260 1	267.3	241.1	297.5	408.4	307.0	**2,977.2**
1967	Coal	29 8	29 0	28 6	24 8	27.0	19 8	20.9	27 6	28.8	27 8	27 8	33.5	**325.4**
	Oil	'	2.0	4 0	0.0	0.0	0.0	0.0	0 0	'	0 0	'	0.0	**6.1**
	Gas	223 0	171 8	56 5	12.0	3.7	6 6	5.3	4 3	3.1	6.5	4.9	4.8	**502.5**
1968	Coal	34 4	29 6	25.1	29 7	28.7	28.6	25.7	19 9	33.9	56 5	37.8	49.3	**399.2**
	Oil	0.0	0.0	0.0	0.0	0.0	'	8.2	3 2	0.0	'	3 3	8.1	**22.9**
	Gas	7 5	2.9	3 7	1.8	3.8	2.8	97 4	142 3	30.0	85.6	120 1	133.4	**631.3**
1969	Coal	56.9	52.9	56.9	47 6	30.3	27 8	44 8	35.6	77 6	44 2	41 5	57.8	**576.6**
	Oil	11.9	1.5	5.5	0.0	3.4	2.8	1.3	0.5	0.0	37.1	25.5	15.4	**104.9**
	Gas	149 4	91 3	115.4	82 2	138.9	177.4	123.3	86 2	92.3	178 2	149 2	136.7	**1,520.5**
1970	Coal	82.4	56.9	67.5	51 2	36.9	25 5	29 6	33.3	67 0	89 7	91 1	91.6	**722.7**
	Oil	13.0	11 3	1.4	0.0	'	0 1	0.1	0.0	0.0	'	0.0	'	**26.0**
	Gas	159 7	126.5	106.4	94 5	160.2	197 2	294 7	141.4	70.3	106 0	457.6	614.9	**2,529.4**
1971	Coal	92.0	60 5	58.3	48.4	43.3	44.4	33.9	15.7	30.3	71.0	87.5	86.7	**672.0**
	Oil	'	0 1	'	0 0	'	'	'	0.0	0 0	'	0 0	0.0	**0.2**
	Gas	279.3	76.8	68.7	58 4	150.3	123 1	15.4	4 0	17.0	61 3	79.3	146.2	**1,079.8**
1972	Coal	86.6	75 1	55.2	55 7	30 8	43.1	64 3	67 1	43 9	77 8	74 4	94 7	**768.7**
	Oil	1.6	'	'	0.0	'	'	'	'	'	0 9	0.2	14.6	**17.5**
	Gas	83 1	54 0	64 0	40 9	49 1	74 4	100 1	95 2	50 8	91 7	224 7	289 4	**1,217.4**
1973	Coal	85.6	69 0	76.3	92.1	94 3	26.0	50 9	91.6	53 0	74 7	87 6	91.5	**892.6**
	Oil	1.8	0 2	0 1	9.2	24 8	0 4	8 1	18 4	0.2	50 1	38 8	0.1	**152.2**
	Gas	326 3	233 7	198 4	185.3	177.8	99 8	0 0	191.0	166.0	271 8	178 0	139.3	**2,167.4**

'less than 0.1

TABLE 2.7 (continued)
MONTHLY CONSUMPTION OF FUELS BY ELECTRIC UTILITIES IN MONTANA, 1960-80

Year	FUEL	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL
1974	Coal	79.8	78.3	73 6	65.1	61 2	18.8	63 4	72.9	77.5	83.7	89.5	90 8	**854.6**
	Oil	10.6	'	'	'	0.3	'	'	'	'	'	'	2.9	**14.0**
	Gas	206.6	92.8	109.6	106 7	69.8	54.7	7.2	51.5	55 5	111 8	82.8	89.0	**1,038.0**
1975	Coal	83.2	78.7	88 3	88 8	76.4	47.3	61.8	70 8	59 3	84.5	145.8	176.3	**1,061.3**
	Oil	1.9	'	'	'	0 1	'	'	'	14 2	17.8	10.1	18.3	**62.6**
	Gas	148.0	113 5	90 5	51 4	50.0	64 0	171.3	104.9	105.0	56.6	47 6	70 6	**1,073.3**
1976	Coal	193.1	175 6	179 8	140.8	91.8	94 6	145.7	146.8	268.2	326 1	287.9	323.1	**2,373.5**
	Oil	6.3	6.2	5.2	6.3	1.0	7.6	11 2	10.2	5.4	7.3	9.4	4.5	**80.6**
	Gas	58.7	47 5	51.5	39.2	28.5	43 6	70.4	70.4	49 8	113.3	61.1	74 5	**708.5**
1977	Coal	315.1	188 7	192.7	262.7	188.1	266.3	288.2	286.0	320.2	245.9	284.8	357.8	**3,196.5**
	Oil	9 6	3.9	10.8	72.0	27.3	7.1	24.7	23.0	1.1	3.5	6.6	5 6	**195.2**
	Gas	87.6	38.8	56 9	106 7	36.8	45.1	119.7	229 2	35 5	75.2	73.1	48 7	**953.3**
1978	Coal	281.2	305.8	267.9	170.8	176.2	194 1	229.7	300.2	287 2	327.9	297.0	346 1	**3,184.2**
	Oil	12.8	4 8	5 2	9 3	9.6	10.4	7.8	10.3	5 5	6.0	8 7	7 8	**98.1**
	Gas	48.0	71.9	40.5	52.7	35.8	9.4	50.6	55 4	85.4	103.7	156.1	199.9	**909.4**
1979	Coal	325.0	278.8	298.5	197 4	184 4	284 0	268.2	337.2	318 7	328 5	320 6	319.9	**3,461.4**
	Oil	39.8	20.1	8.4	4.2	15.6	14 4	11.4	5.3	7.9	7.7	7.0	4 7	**146.5**
	Gas	104.0	151.8	88.2	36.2	55.9	77.8	170 4	270.2	297.0	447.0	271 1	350.9	**2,320.4**
1980	Coal	317.2	295.6	314 7	207.8	112.9	88.0	304.9	341.0					
	Oil	7 7	6.3	5.6	1.0	5.2	11.0	6.5	2.0					
	Gas	460 6	435.4	434 8	447.0	12.9	24 1	78 4	533.0					

NOTE: Units are: Coal: 1,000 short tons; Oil: 1,000 barrels; Gas: million cubic feet

'less than 0.1

SOURCES: Federal Energy Regulatory Commission (formerly Federal Power Commission), Form 4 News Releases (1960-76); U.S. Department of Energy, Energy Information Administration, *Electric Power Statistics*, monthly reports for 1977-78 (EIA-0034); U.S. Department of Energy, Energy Information Administration, *Power Production, Fuel Consumption and Installed Capacity Data*, annual report for 1979 (EIA-0049); U.S. Department of Energy, Energy Information Administration, *Preliminary Power Production, Fuel Consumption and Installed Capacity Data*, monthly reports for January-May, 1980 (EIA-0005); U.S. Department of Energy, Energy Information Administration, *Electric Power Monthly*, monthly reports for June-August, 1980 (EIA-0226).

3

COAL

HIGHLIGHTS

- Surface mines in Montana produced 26,578,715 tons of subbituminous coal and lignite in 1978, down slightly from the previous year.
- Since 1974, Big Horn County has been the leading coal-producing county in Montana. Big Horn County produced 13,628,587 tons of coal in 1978, followed closely by Rosebud County with 12,641,342 tons.
- The average mine-mouth price for Montana coal was $6.82 per ton, up one dollar per ton from the previous year.
- Approximately 90 percent of the coal mined in Montana is shipped out-of-state.
- Of the 3.7 million tons of coal consumed in Montana in 1979, 94 percent was used to generate electricity.

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TABLE 3.1
DEMONSTRATED RESERVE BASE[1] OF COALS IN THE UNITED STATES
JANUARY 1, 1976
(million short tons)

State	Anthracite	Bituminous	Subbituminous	Lignite	TOTAL[2]
Alabama	—	2,008.7	—	1,083.0	3,091.7
Alaska	—	697.5	5,446.6	14.0	6,158.2
Arizona	—	325.5	—	—	325.5
Arkansas	96.4	270.1	—	25.7	392.2
Colorado	25.5	9,144.0	4,121.3	2,965.7	16,256.4
Georgia	—	0.9	—	—	0.9
Idaho	—	4.4	—	—	4.4
Illinois	—	67,969.3	—	—	67,969.3
Indiana	—	10,714.4	—	—	10,714.4
Iowa	—	2,202.2	—	—	2,202.2
Kansas	—	998.2	—	—	998.2
Kentucky, Eastern	—	13,540.1	—	—	13,540.1
Kentucky, Western	—	12,460.8	—	—	12,460.8
Louisiana	—	—	—	[3]	[3]
Maryland	—	1,048.3	—	—	1,048.3
Michigan	—	126.8	—	—	126.8
Missouri	—	5,014.0	—	—	5,014.0
MONTANA	**—**	**1,385.4**	**103,416.7**	**15,766.8**	**120,568.9**
New Mexico	2.3	1,859.9	2,735.8	—	4,598.0
North Carolina	—	31.7	—	—	31.7
North Dakota	—	—	—	10,145.3	10,145.3
Ohio	—	19,230.2	—	—	19,230.2
Oklahoma	—	1,618.0	—	—	1,618.0
Oregon	—	[3]	17.5	—	17.5
Pennsylvania	7,109.4	23,727.7	—	—	30,837.1
South Dakota	—	—	—	426.1	426.1
Tennessee	—	965.1	—	—	965.1
Texas	—	—	—	3,181.9	3,181.9
Utah	—	6,551.7	1.1	—	6,552.8
Virginia	137.5	4,165.5	—	—	4,302.9
Washington	—	255.3	1,316.7	8.1	1,580.1
West Virginia	—	38,606.5	—	—	38,606.5
Wyoming	—	4,002.5	51,369.4	—	55,371.9
U.S. TOTAL[2]	**7,371.1**	**228,924.6**	**168,425.0**	**33,616.6**	**438,337.3**

NOTE: The coal reserve base consists of coal in the ground that was considered to be technically and economically minable on January 1, 1976. The amount of coal that can be recovered from the reserve base is termed the reserve. Recoverability ranges from 40 to 90 percent, depending on the characteristics of the coalbed, the mining method, and restraints imposed on the mining operations by natural and manmade features and restrictions. On a national basis, at least half of the coal reserve base, more than 200 billion tons, was estimated to be recoverable.

The criteria for determining the coal reserve base were thickness—28 inches or more for bituminous coal and anthracite, and 60 inches or more for subbituminous coal and lignite—and maximum depth—1,000 feet for all coals except lignite, which was limited to beds that can be surface mined to depths of 200 feet. Some coalbeds that did not meet these criteria were included because they were being mined or could be mined.

[1]Includes measured and indicated resource categories as defined by the U.S. Bureau of Mines and the U.S. Geological Survey and represents 100 percent of the coal in place.
[2]Entries may not add to totals shown due to rounding.
[3]Quantity undetermined (basic resource data do not provide the detail required for delineation of reserve base).

SOURCE: U.S. Department of the Interior, Bureau of Mines, Mineral Industry Survey, *Demonstrated Coal Reserve Base of the United States on January 1, 1976*, August 1977 (quoted in U.S. Department of Energy, Energy Information Administration, *Bituminous Coal and Lignite Production and Mine Operations—1978* (EIA-0118 (78))).

TABLE 3.2
MONTANA COAL PRODUCTION BY COMPANY AND MONTH, 1978-80
(tons)

1978

Company	Jan.	Feb.	Mar	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Company Totals
Coal Creek	1,230	487	201	11	0	40	143	178	314	1,857	1,219	2,565	**8,245**
Decker	549,008	479 513	743,086	679,437	674,034	601,374	1,057,465	670,834	761,296	766,995	888,547	1,296,049	**9,167,638**
Divide	1 332	1,180	685	209	140	427	6	0	742	1,033	1,565	1,665	**8,984**
Knife River	29 212	26 040	28,304	24 388	24 635	0	17,750	30,030	24,850	33,374	23,008	27,117	**288,708**
Peabody	118,534	99 407	165,048	205,958	224 928	163 599	182 494	208,020	153,854	205,394	185,063	168,115	**2,080,414**
PM Coal	1,878	1,346	750	294	200	39	0	187	570	1 103	1,700	1,810	**9,877**
Western Energy	753,577	564 284	1,132,929	1,087,787	1 027,064	935,376	915,723	876,472	750,390	841,060	795,611	885 477	**10,565,750**
Westmoreland	237,394	174 883	417,214	553,967	551,860	417 098	407,097	544,973	470,398	314,437	283,171	221,966	**4,549,558**
MONTHLY TOTAL	**1,692,165**	**1,347,240**	**2,488,217**	**2,552,051**	**2,502,861**	**2,117,953**	**2,580,678**	**2,330,694**	**2,162,414**	**2,165,253**	**2,134,884**	**2,604,764**	**26,679,174**

1979

Company	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov	Dec	Company Totals
Beartooth	0	0	0	0	0	0	0	207	310	198	0	0	**715**
Coal Creek	1 655	744	1,008	1 227	972	931	2 065	4 164	2 924	5,022	4,300	4,854	**29,866**
Decker	239,743	200 432	396,997	411,706	602,812	646,877	651 483	545,027	701,672	708,099	761,691	1,200,833	**7,067,372**
(East) Decker	252,976	173,625	250,248	424 138	693,530	556 228	574 080	508,150	607,449	651,969	627,858	577,182	**5,897,433**
Divide	2,328	1 247	525	343	135	45	68	204	613	1,234	1,571	1,151	**9,464**
Knife River	33,701	29 002	32,175	20,971	17,388	21,183	22 908	28,443	22,190	23,760	27,403	26,019	**305,143**
Peabody	147,829	110 210	164 810	229,682	278,652	178 942	119,500	206,987	203,473	320,069	287,216	210,263	**2,457,633**
PM Coal	2,086	1 119	730	361	240	0	129	0	0	1,343	2,722	2,019	**10,749**
Western Energy	791,997	631,853	1,004 456	1,025,020	1 128 999	907,575	1,044,402	1,066,056	980,582	1,054,564	1,072,434	1,017,620	**11,725,558**
Westmoreland	187,100	169 454	403,085	492,054	690,748	522 064	584 411	491,836	400,142	385,282	430,993	192,590	**4,949,759**
MONTHLY TOTAL	**1,659,415**	**1,317,686**	**2,254,034**	**2,605,502**	**3,413,476**	**2,833,845**	**2,999,046**	**2,850,867**	**2,919,045**	**3,151,342**	**3,216,188**	**3,232,531**	**32,453,692**

1980

Company	Jan.	Feb	Mar	April	May	June	July	Aug.	Sept.	Oct.
Beartooth	0	0	0	749	1,545	1,635	816	2,576	0	0
Coal Creek	5,723	4 334	3,924	3,924	3,465	3 421	3,830	3,540	5,332	9,075
Decker	564,970	354 697	476,965	490,993	383,569	339,450	574,057	384,517	436,503	494,001
(East) Decker	458,410	422,715	491 380	439,380	450,540	256,100	779,805	415,258	425,814	452,000
Divide	1,175	837	637	203	66	52	128	232	769	1,222
Knife River	24,822	21,294	29,924	23,808	14,170	21,842	24 614	25,188	32,832	30,228
Long Construction	876,465	782,751	1,100,680	847,871	573,564	645,595	926,944	978,496	981,996	904,289
Morrison-Knudsen	318,008	361,808	363,388	417,317	312,789	465,548	569,872	564,526	524,293	511,985
PM Coal	2,442	1,575	1,581	406	325	380	0	109	609	974
Peabody Coal	232,012	184,089	161,422	170,778	256,074	260,097	193,955	320,288	291,282	307,161
MONTHLY TOTAL	**2,484,027**	**2,134,100**	**2,629,901**	**2,395,429**	**1,996,107**	**1,994,120**	**3,074,021**	**2,694,730**	**2,699,430**	**2,710,935**

SOURCE: Montana Department of Labor and Industry, Workers' Compensation Division, Safety and Health Bureau.

TABLE 3.3
MONTANA COAL PRODUCTION BY COUNTY, 1950-79
(tons)

Year	Big Horn	Carbon	Cascade	Custer	Dawson	Fallon	Garfield	McCone
1950		198,781	21,306	5,618	7,657		563	1,646
1951		152,095	18,106	2,447	7,657	93	500	
1952		122,771	2,278	1,441	6,326		413	
1953		56,942	1,086	940	4,579			
1954		19,716	2,225	1,080	3,006			59
1955		20,017	1,252	233	3,780			
1956		17,025	2,132		1,819			25
1957		15,053	2,095		2,734			965
1958		10,906	1,816		2,393			513
1959		12,814	1,923		2,502			279
1960		11,085	1,650		1,920			366
1961		9,962	1,477		1,313			1,091
1962		11,363	1,444		1,242			468
1963		12,514	570		1,477			335
1964		12,023			987			316
1965		25,684			1,217			142
1966		52,811			767			254
1967					770			196
1968					266			163
1969					160			165
1970	74,856				744			229
1971					127			
1972	792,949				340			
1973	4,159,287				242			
1974	8,332,038				373			
1975	13,331,433							
1976	14,291,542							
1977	14,768,368							
1978	13,628,587							
1979	18,001,299	545						

TABLE 3.3 (continued)
MONTANA COAL PRODUCTION BY COUNTY, 1950-79
(tons)

Year	Musselshell	Powder River	Prairie	Richland	Rosebud	Sheridan	Valley	STATE TOTAL
1950	523,582	3,838	851	12,072	1,708,869	8,882	156	**2,493,821**
1951	593,030	3,772	1,950	12,956	1,488,300		329	**2,281,235**
1952	502,533	2,573	1,213	14,589	1,406,321	6,862	99	**2,067,419**
1953	370,745	1,273	900	10,478	1,421,140			**1,868,083**
1954	345,474	2,160	213	10,156	1,083,311	7,406		**1,474,806**
1955	366,086			1,444	795,955	7,541		**1,196,308**
1956	347,126	1,858	336	5,420	952,080	6,601		**1,334,422**
1957	199,652	2,557	614	1,527	164,311	5,195		**394,703**
1958	220,606	4,711	307	76,218	19,241	2,125		**338,836**
1959	135,117	1,517	313	177,972		5,429		**337,866**
1960	91,819	820		188,820		4,793		**301,273**
1961	75,060	1,760		264,108		4,077		**358,848**
1962	48,565	2,080		297,013		3,675		**365,850**
1963	31,044	2,258		285,697		2,653		**336,548**
1964	31,836	2,535		294,463		2,476		**344,636**
1965	47,592	2,107		298,315		2,191		**377,248**
1966	32,752	1,787		325,348		1,691		**415,410**
1967	33,481	2,128		326,757		1,177		**364,509**
1968	31,637	1,853		329,022	192,029	301		**555,271**
1969	30,540	2,047		306,833	685,140			**1,024,885**
1970	26,675	3,053		321,908	3,089,693			**3,517,158**
1971	112,252	2,660		325,475	6,656,612			**7,097,126**
1972	46,460	1,727		320,975	7,101,954			**8,264,405**
1973	29,837	1,444		312,785	6,225,424			**10,729,019**
1974	20,669	1,001		329,590	5,440,384			**14,124,055**
1975	16,524	1,862		300,053	8,511,226			**22,161,098**
1976	15,709	1,614		314,814	11,662,052			**26,285,731**
1977	15,727	16,015		311,390	12,117,552			**27,229,052**
1978	18,478	8,246		302,062	12,641,342			**26,598,715**
1979		29,875		303,528	14,203,545			**32,538,792**

SOURCE: Montana Department of Revenue, Property Assessment Division.

TABLE 3.4
AVERAGE MINE-MOUTH COAL PRICES IN MONTANA BY COUNTY, 1950-79
(dollars per ton)

Year	Big Horn	Carbon	Cascade	Custer	Dawson	Fallon	Garfield	McCone
1950		4.77	6.47	3.23	3.00		3.00	2.04
1951		5.00	1.43	3.00	2.48	2.00	2.00	
1952		5.04	9.59	3.95	2.00		2.00	
1953		5.47	10.90	4.00	2.00			
1954		7.48	6.80	4.13	3.00			3.00
1955		3.50	8.06	1.00	1.00			
1956		7.25	6.90		1.10			1.12
1957		7.50	7.30		1.00			1.00
1958		7.56	7.75		1.00			1.00
1959		7.53	7.55		1.00			1.00
1960		7.45	7.67		1.00			1.00
1961		7.66	7.82		1.00			2.16
1962		7.69	7.79		1.00			3.59
1963		8.08	7.74		1.00			1.88
1964		8.26			1.00			1.75
1965		6.76			1.00			4.00
1966		6.49			1.00			3.08
1967					1.00			3.51
1968					1.00			4.96
1969					1.00			1.00
1970	4.62				1.00			3.57
1971					1.00			
1972	3.47				1.00			
1973	3.93				1.00			
1974	4.53				1.00			
1975	5.68							
1976	6.69							
1977	6.89							
1978	8.23							
1979	13.56	20.99						

TABLE 3.4 (continued)
AVERAGE MINE-MOUTH COAL PRICES IN MONTANA BY COUNTY, 1950-79
(dollars per ton)

Year	Musselshell	Powder River	Prairie	Richland	Rosebud	Sheridan	Valley	STATE AVERAGE
1950	4.50	2.00	2.00	3.52	1.32	3.00	3.00	**2.34**
1951	4.14	2.00	2.00	3.39	1.65		3.50	**2.54**
1952	4.35	2.00	2.00	2.49	1.98	3.30	3.50	**2.76**
1953	4.75	3.00	3.00	3.80	2.00			**2.66**
1954	4.25	3.00	3.00	4.09	2.00	3.50		**2.62**
1955	4.60			3.00	2.00	3.55		**2.83**
1956	4.95	1.10	1.10	4.30	1.95	3.56		**2.83**
1957	5.38	1.00	1.00	4.33	2.95	3.58		**4.35**
1958	4.03	1.00	1.00	1.96	2.83	5.57		**3.55**
1959	5.44	1.00	1.00	1.93		3.80		**3.59**
1960	6.40	1.00		1.94		3.80		**3.56**
1961	6.32	1.00		1.93		3.93		**3.04**
1962	4.24	1.00		1.92		4.00		**2.45**
1963	6.29	1.00		1.92		4.00		**2.57**
1964	6.58	1.00		1.92		4.00		**2.58**
1965	6.47	1.00		1.93		4.32		**2.83**
1966	6.98	1.00		1.94		4.31		**2.91**
1967	7.07	1.00		1.95		4.50		**2.42**
1968	7.58	1.00		1.95	1.63	4.50		**2.15**
1969	8.08	1.00		2.02	1.81			**2.07**
1970	6.73	1.00		2.12	1.68			**1.82**
1971	4.29	1.00		2.25	1.73			**1.79**
1972	5.41	6.00		2.43	1.83			**2.03**
1973	9.31	7.13		2.58	2.06			**2.83**
1974	6.62	9.41		3.39	2.80			**3.84**
1975	10.00	10.00		5.02	3.85			**4.97**
1976	18.31	9.74		6.35	4.49			**5.72**
1977	20.84	7.86		6.92	4.48			**5.83**
1978	22.21	11.71		7.80	5.25			**6.82**
1979		8.70		8.60	6.17			**10.29**

NOTE: In each county, average price was calculated by dividing the gross value of production by the total production for that county. The year is the year in which the coal was mined. Production from a given year is taxable the following year.

SOURCE: Montana Department of Revenue, Property Assessment Division.

TABLE 3.5
MONTANA COAL PRODUCTION AND AVERAGE MINE-MOUTH PRICES BY TYPE OF COAL, 1950-78

Year	PRODUCTION (thousand tons)			AVERAGE MINE-MOUTH PRICE (dollars per ton)		
	Subbituminous	Lignite	TOTAL	Subbituminous	Lignite	TOTAL
1950	2,468	52	**2,520**	2.30	3.37	**2.33**
1951	2,310	35	**2,345**	2.61	3.51	**2.63**
1952	2,039	31	**2,070**	2.80	3.70	**2.81**
1953	1,848	25	**1,873**	2.64	3.77	**2.66**
1954	1,491	NA	**NA**	2.79	NA	**NA**
1955	1,217	30	**1,247**	3.01	3.82	**3.03**
1956	820	26	**846**	4.11	3.70	**4.10**
1957	387	26	**413**	5.33	3.80	**5.23**
1958	211	94	**305**	5.94	2.34	**4.84**
1959	152	193	**345**	7.06	2.08	**4.28**
1960	113	200	**313**	6.87	2.06	**3.79**
1961	97	274	**371**	6.76	2.01	**3.26**
1962	78	304	**382**	6.90	1.99	**2.98**
1963	53	290	**343**	7.51	1.95	**2.82**
1964	46	300	**346**	7.40	1.95	**2.68**
1965	63	301	**364**	7.24	1.96	**2.88**
1966	91	328	**419**	7.10	1.96	**3.08**
1967	65	300	**365**	NA	NA	**NA**
1968	189	330	**519**	3.12	1.89	**2.33**
1969	722	308	**1,030**	2.18	2.03	**2.13**
1970	3,124	323	**3,447**	1.83	2.13	**1.86**
1971	6,737	327	**7,064**	1.79	2.27	**1.82**
1972	7,899	322	**8,221**	2.01	2.45	**2.02**
1973	10,411	314	**10,725**	2.83	2.60	**2.82**
1974	13,775	331	**14,106**	3.91	3.00	**3.90**
1975	21,620	520	**22,140**	5.06	5.04	**5.06**
1976	25,919	312	**26,231**	NA	NA	**4.90**
1977	29,020	300	**29,320**	NA	NA	**5.30**
1978	26,290	310	**26,600**	NA	NA	**7.37**

SOURCES: U.S. Bureau of Mines (1950-76); U.S. Department of Energy, Energy Information Administration (1977-78).

TABLE 3.6
SUMMARY OF RECEIPTS OF MONTANA AND WYOMING COAL BY ELECTRIC UTILITY PLANTS, 1973-79
(thousand tons)

	MONTANA COAL			WYOMING COAL		
Year	Received by In-State Utility Plants	Received by Out-of-State Utility Plants	TOTAL	Received by In-State Utility Plants	Received by Out-of-State Utility Plants	TOTAL
1973	882	9,741	**10,623**	5,670	7,453	**13,123**
1974	822	13,114	**13,936**	5,792	12,087	**17,879**
1975	1,197	20,180	**21,377**	7,235	14,356	**21,591**
1976	2,316	22,642	**24,958**	7,711	18,070	**25,781**
1977	3,223	22,730	**25,954**	11,281	30,910	**42,191**
1978	3,331	22,976	**26,307**	11,000	42,464	**53,465**
1979	3,511	24,613	**28,124**	13,425	55,375	**68,800**

SOURCE: Federal Energy Regulatory Commission (formerly the Federal Power Commission), Form 423.

TABLE 3.7
DISTRIBUTION OF BITUMINOUS, SUBBITUMINOUS AND LIGNITE COAL PRODUCED IN THREE WESTERN DISTRICTS BY STATE OF DESTINATION, 1976-79
(thousand short tons)

DISTRICT OF ORIGIN

STATE OF DESTINATION	MONTANA AND WASHINGTON DISTRICTS				WYOMING DISTRICT				NORTH AND SOUTH DAKOTA DISTRICT				THREE DISTRICT TOTAL			
	1976	1977	1978	1979	1976	1977	1978	1979	1976	1977	1978	1979	1976	1977	1978	1979
Alabama						43							0	43	0	0
Alaska	706	712											706	712	0	0
Arkansas							1,780	1,549					0	0	1,780	1,549
California					1								1	0	0	0
Colorado					3,099	3,286	3,195	3,093					3,099	3,286	3,195	3,093
Idaho					448	343	355	418					448	343	355	418
Illinois	8,759	6,166	5,639	6,701	1,728	3,466	5,253	6,580					10,487	9,632	10,892	13,281
Indiana	1,243	1,315	1,183	1,281	2,528	2,574	2,013	1,220	7				3,778	3,889	3,196	2,501
Iowa	329	232	379	362	3,227	4,154	5,189	7,625	13				3,569	4,386	5,568	7,987
Kansas					1,150	3,312	5,357	6,973					1,150	3,312	5,357	6,973
Kentucky	42		50			41	1,072						42	41	1,122	0
Louisiana							32	573					0	0	32	573
Michigan	2,887	3,486	3,407	4,359								1	2,887	3,486	3,407	4,360
Minnesota	8,115	10,036	9,878	11,410	29	17	25	16	1,161	1,350	1,512	1,306	9,305	11,403	11,415	12,732
Missouri					1,062	939	2,108	2,022					1,062	939	2,108	2,022
MONTANA	**2,452**	**3,227**	**3,336**	**3,519**	**73**	**150**	**170**	**137**					**2,525**	**3,377**	**3,506**	**3,656**
Nebraska				1	2,044	2,055	2,905	4,235					2,044	2,055	2,905	4,236
Nevada						1	1	1					0	1	1	1
New York							1						0	0	1	0
North Dakota	1				6	4	8	3	7,488	8,207	9,592	11,046	7,495	8,211	9,600	11,049
Ohio					2,170	4,046	4,667	3,835					2,170	4,046	4,667	3,835
Oklahoma					599	1,920	1,477	4,458					599	1,920	1,477	4,458
Oregon					244	225	202	218					244	225	202	218
Pennsylvania			2	1									0	0	2	1
South Dakota	3	14			410	482	423	320	2,422	2,244	2,873	2,585	2,835	2,740	3,296	2,905
Tennessee						41							0	41	0	0
Texas			64	1,797	1,411	4,587	6,856	9,803				1	1,411	4,587	6,920	11,601
Utah					29	78	72	84					29	78	72	84
Washington	4,111	5,040	4,694	5,050	138	224	135	130					4,249	5,264	4,829	5,180
Wisconsin	2,584	2,722	2,631	2,868	985	710	1,948	2,664					3,569	3,432	4,579	5,532
Wyoming					9,780	13,291	13,076	15,908					9,780	13,291	13,076	15,908
TOTAL	**31,232**	**32,950**	**31,263**	**37,349**	**31,161**	**45,989**	**58,320**	**71,865**	**11,091**	**11,801**	**13,977**	**14,939**	**73,484**	**90,740**	**103,560**	**124,153**
Percent of three-district total for year	**45.5**	**36.3**	**30.2**	**30.1**	**42.4**	**50.7**	**56.3**	**57.9**	**15.1**	**13.0**	**13.5**	**12.0**				

NOTE: Wyoming district includes all mines in Wyoming and Idaho; North and South Dakota district includes all mines in North Dakota and South Dakota; Montana district includes all mines in Montana; and Washington district includes all mines in Washington, Oregon, and Alaska. Montana and Washington districts are combined in source data.

SOURCES: U.S. Department of Energy, Energy Information Administration, various titles including *Coal-Bituminous and Lignite, Bituminous Coal and Lignite Distribution* and *Bituminous and Subbituminous Coal and Lignite Distribution*, summary reports for various time periods (1976-79).

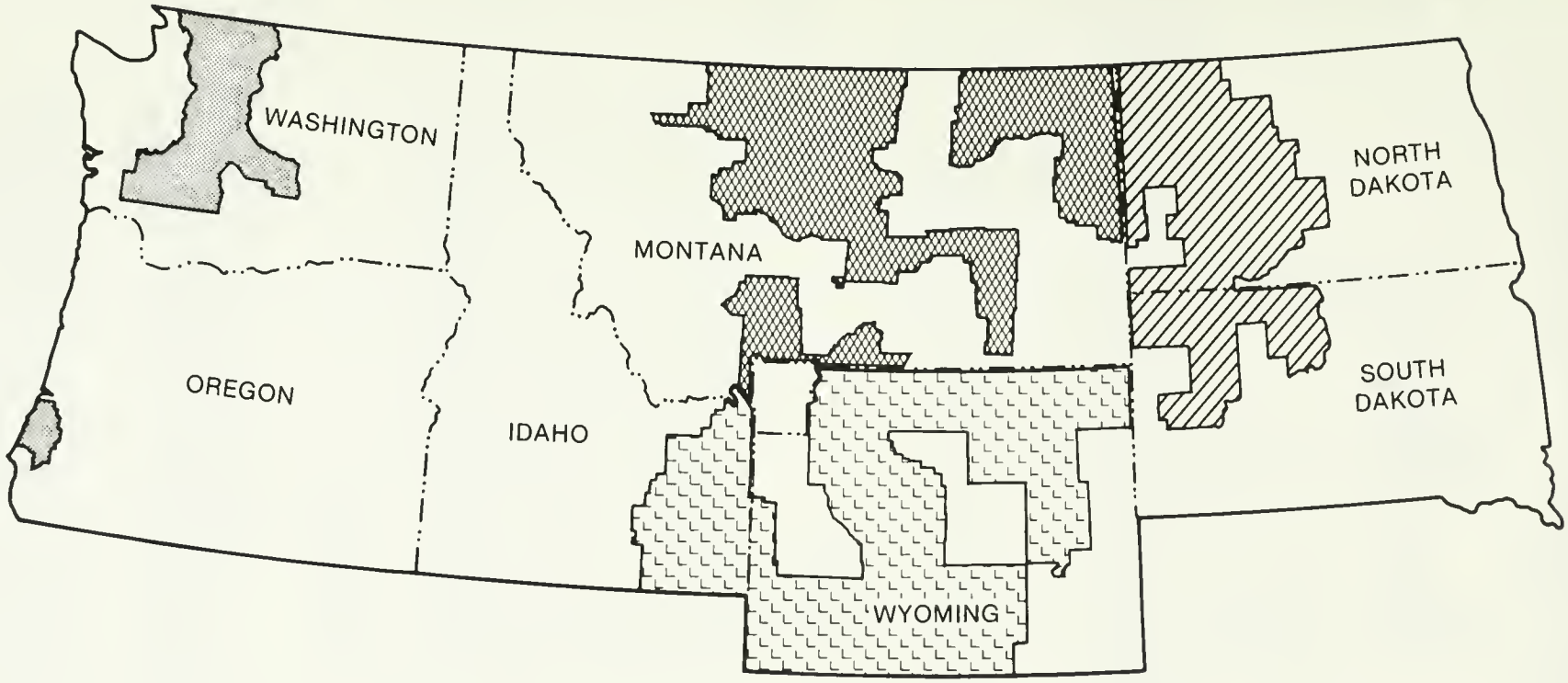

FIGURE 3.1 WESTERN COAL PRODUCING DISTRICTS

SOURCE: U.S. Department of Energy, Energy Information Administration, *Bituminous Coal and Lignite Distribution, Calendar Year 1978* (EIA-0125/4Q78), page 8.

TABLE 3.8
DISTRIBUTION OF BITUMINOUS COAL AND LIGNITE IN MONTANA, 1974-79
(thousand short tons)

	Electric Utilities	Retail Sales	All Other Industries	TOTAL
1974	843	9	55	**907**
1975	1,203	7	42	**1,252**
1976	2,452	5	108	**2,565**
1977	3,225	1	182	**3,408**
1978	3,334	4	183	**3,522**
1979	3,513	3	214	**3,731**

SOURCES: U.S. Department of the Interior, Bureau of Mines, Mineral Industry Surveys, various titles including *Bituminous Coal and Lignite Distribution* and *Coal-Bituminous and Lignite*, annual reports (1974-76); U.S. Department of Energy, Energy Information Administration, various titles including *Coal-Bituminous and Lignite, Bituminous Coal and Lignite Distribution* and *Bituminous and Subbituminous Coal and Lignite Distribution*, summary reports for various time periods (1976-79).

4

NATURAL GAS

HIGHLIGHTS

- Proved reserves of natural gas were estimated by the American Gas Association to be 992 billion cubic feet as of December 31, 1978. This is 5 percent lower than the estimate for the previous year.
- Montana wells produced 54 billion cubic feet of natural gas in 1979, an increase of 14 percent over 1978 production.
- In 1979, the state's natural gas utilities reported sales of 60 billion cubic feet, down slightly from the 1978 figure.
- Residential gas customers paid an average of $1.89 per thousand cubic feet (MCF) of gas in 1978, while commercial customers paid an average of $1.65 per MCF and industrial customers paid an average of $1.64 per MCF. The state-wide average was $1.72 per MCF.

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NOTE: All volumetric data presented in Chapter 4 are expressed using a pressure base of 14.73 pounds per square inch absolute (psia) at 60 degrees Fahrenheit (60°F). Conversions to this uniform pressure base were made by the Energy Division, Department of Natural Resources and Conservation, where necessary.

TABLE 4.1
NATURAL GAS PROVED RESERVES IN MONTANA, 1950-78
(million cubic feet)

	Nonassociated	Associated or Dissolved	Underground Storage	TOTAL GAS
1950	718,722	69,839	4,470	**793,031**
1951	696,554	119,533	7,522	**823,609**
1952	693,916	119,631	9,562	**823,109**
1953	612,965	117,937	28,949	**759,851**
1954	573,496	116,183	30,122	**719,801**
1955	560,565	125,067	30,178	**715,810**
1956	546,049	115,906	30,614	**692,569**
1957	512,583	119,311	34,914	**666,808**
1958	508,851	132,295	37,163	**678,309**
1959	492,162	128,880	40,835	**661,877**
1960	462,532	105,362	54,883	**622,777**
1961	435,178	104,319	53,601	**593,098**
1962	419,128	98,958	82,085	**600,171**
1963	399,266	103,558	95,307	**598,131**
1964	384,278	99,287	106,704	**590,269**
1965	373,440	103,672	118,740	**595,852**
1966	383,346	102,239	134,765	**620,350**
1967	550,681	138,454	148,583	**837,718**
1968	579,572	174,266	157,695	**911,533**
1969	799,770	147,927	162,511	**1,110,208**
1970	793,283	141,854	164,786	**1,099,923**
1971	715,195	127,032	182,334	**1,024,561**
1972	790,660	92,628	180,748	**1,064,036**
1973	821,513	85,625	185,311	**1,092,449**
1974	676,749	81,272	143,239	**901,260**
1975	686,350	73,912	169,724	**929,986**
1976	876,452	67,435	162,383	**1,106,270**
1977	815,862	67,428	160,692	**1,043,982**
1978	768,683	65,779	157,206	**991,668**

NOTE: Proved reserves are the estimated amounts of natural gas and oil that geologic and engineering data indicate are recoverable from known reservoirs under present economic and operating conditions. Natural gas is classified in two categories based on type of occurrence in reservoirs, as follows:

1. Nonassociated gas is defined as free natural gas not in contact with crude oil in the reservoir.
2. Associated or dissolved gas is the combined volume of natural gas which occurs in crude oil reservoirs either as free gas (associated) or as gas in solution with the crude oil (dissolved).

Since 1973, only the recoverable portion of natural gas in underground storage has been reported.

SOURCE: American Gas Association, *Gas Facts*, published annually, (1950-78).

TABLE 4.2
PRODUCTION AND AVERAGE WELLHEAD PRICE OF NATURAL GAS IN MONTANA, 1950-79

	Production[1] (million cubic feet)	Production[2] (million cubic feet)	Average Wellhead Price[2] (cents per thousand cubic feet)
1950	39,708	39,010	5.0
1951	39,038	36,123	5.3
1952	30,409	27,939	5.7
1953	31,779	28,592	6.3
1954	31,150	29,765	6.0
1955	30,468	30,227	5.2
1956	29,356	28,350	6.1
1957	32,979	31,413	6.0
1958	31,327	27,689	6.5
1959	31,585	30,551	6.0
1960	35,381	30,411	6.8
1961	34,884	32,407	6.4
1962	28,973	29,417	6.1
1963	27,113	25,504	6.6
1964	25,234	23,592	6.6
1965	27,873	26,285	6.5
1966	32,414	29,041	8.1
1967	31,619	29,276	7.9
1968	31,917	28,831	8.8
1969	41,229	37,804	7.2
1970	37,445	35,225	8.1
1971	38,137	28,775	8.2
1972	35,606	32,171	10.0
1973	58,896	56,383	15.9
1974	51,401	41,753	25.2
1975	44,546	41,664	39.4
1976	45,098	42,449	44.0
1977	48,181	45,245	72.0
1978	47,140	47,695	82.10
1979	53,888	56,070	117.88

[1]SOURCE: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1950-79. Oil and Gas Conservation Division production data are based on reports by gas producers, which exclude gas vented or flared and gas used in repressuring. Production here equals by definition the U.S. Bureau of Mines marketed production, except that some gas withdrawn from storage facilities in Montana may be included in the Oil and Gas Conservation Division data.

[2]SOURCE: Montana Department of Revenue, Property Assessment Division. Department of Revenue data are based on tax receipts received from industry. Average wellhead price is computed as the gross value divided by the volume of gas.

TABLE 4.3
SALES AND AVERAGE PRICES OF NATURAL GAS IN MONTANA, 1950-78

	SALES (trillion Btu)					AVERAGE PRICE (cents per million Btu)				
	Residential	Commercial	Industrial	Other	TOTAL	Residential	Commercial	Industrial	Other	TOTAL
1950	12.3	5.9	12.9	1.7	**32.7**	36.9	27.0	30.3	5.9	**31.0**
1951	12.5	6.7	15.0	1.7	**35.9**	49.7	35.8	17.2	22.9	**32.3**
1952	12.3	7.1	15.4	2.9	**37.7**	51.6	37.0	21.4	20.5	**34.1**
1953	12.1	7.0	15.5	1.7	**36.3**	52.7	37.8	21.6	23.9	**35.2**
1954	13.4	7.7	14.1	1.7	**36.9**	52.6	38.7	22.3	24.2	**36.8**
1955	15.4	8.7	17.6	1.8	**43.5**	52.0	38.3	22.4	24.1	**36.1**
1956	15.8	9.0	18.8	1.8	**45.4**	51.0	37.7	21.8	24.2	**35.1**
1957	17.0	9.6	18.4	1.9	**46.9**	57.4	41.8	25.0	24.9	**40.2**
1958	16.3	9.1	19.3	1.9	**46.6**	59.1	43.1	27.0	27.0	**41.4**
1959	18.9	10.8	16.6	2.2	**48.5**	58.9	43.5	27.6	27.6	**43.3**
1960	18.5	11.0	19.8	2.0	**51.3**	60.1	45.2	27.6	29.2	**43.2**
1961	18.7	11.5	20.8	2.1	**53.1**	59.8	44.5	27.9	26.9	**42.7**
1962	19.4	12.0	21.9	2.2	**55.5**	65.7	47.1	29.8	30.1	**46.1**
1963	19.0	11.7	24.4	2.2	**57.3**	68.9	49.6	31.6	33.0	**47.6**
1964	21.1	13.2	26.6	2.4	**63.3**	68.2	49.2	31.6	32.8	**47.5**
1965	22.6	14.4	28.0	2.5	**67.4**	68.1	49.3	31.1	32.1	**47.4**
1966	22.0	14.2	28.2	2.5	**66.9**	69.4	50.2	31.6	33.1	**48.0**
1967	21.9	14.7	25.3	2.6	**64.4**	71.7	51.9	34.0	33.1	**50.9**
1968	22.4	14.6	26.6	2.7	**66.2**	75.4	55.7	33.0	32.9	**52.3**
1969	23.7	15.5	32.2	2.7	**74.1**	79.9	59.0	33.4	35.3	**53.7**
1970	23.5	15.4	36.4	3.5	**78.8**	84.2	62.1	33.6	36.1	**54.4**
1971	24.4	15.9	35.6	3.0	**79.0**	84.6	62.7	33.4	37.7	**55.3**
1972	25.9	16.9	36.7	3.3	**82.8**	87.1	64.5	34.4	39.4	**57.2**
1973	24.7	16.3	36.5	4.2	**81.7**	97.5	73.0	41.3	45.2	**64.7**
1974	23.8	15.7	36.1	3.1	**78.7**	102.0	88.0	57.0	58.0	**76.0**
1975	26.3	17.6	32.6	3.3	**79.8**	118.0	102.0	92.0	88.0	**103.0**
1976	23.9	16.0	28.3	2.9	**71.0**	150.0	130.0	124.0	123.0	**134.0**
1977	23.2	15.6	24.3	2.6	**65.8**	169.0	148.0	153.0	147.0	**157.0**
1978	24.4	16.5	21.4	2.7	**65.1**	205.0	178.0	169.0	175.0	**185.0**

NOTE: These data cover sales of natural gas by utilities only and do not include sales directly from producer to end-user. In the United States, direct sales make up a significant portion of total gas use, particularly in the industrial sector. In Montana, direct sales are not significant; hence, "total sales" is close to "total gas delivered." Some electric utility use of gas is included in the industrial sector.

Average heat content is highly variable, depending on elevation. Natural gas data converted to Btu, as in this table, are, therefore, only a rough approximation.

SOURCE: American Gas Association, *Gas Facts*, published annually, (1950-78).

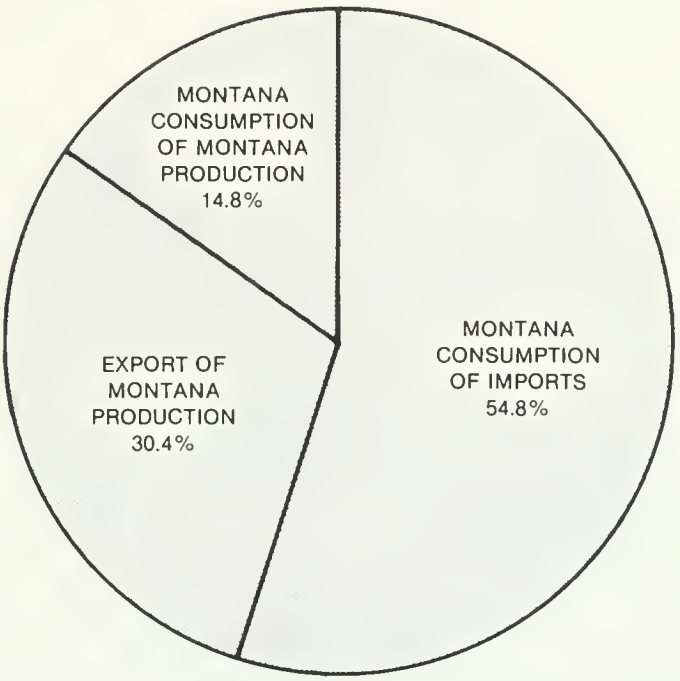

FIGURE 4.1 SUPPLY OF NATURAL GAS IN MONTANA, 1978

SOURCES: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1978; U.S. Department of Energy, Energy Information Administration, *State Energy Data Report: Statistical Tables and Technical Documentation, 1960 through 1978* (EIA-0214 (78)).

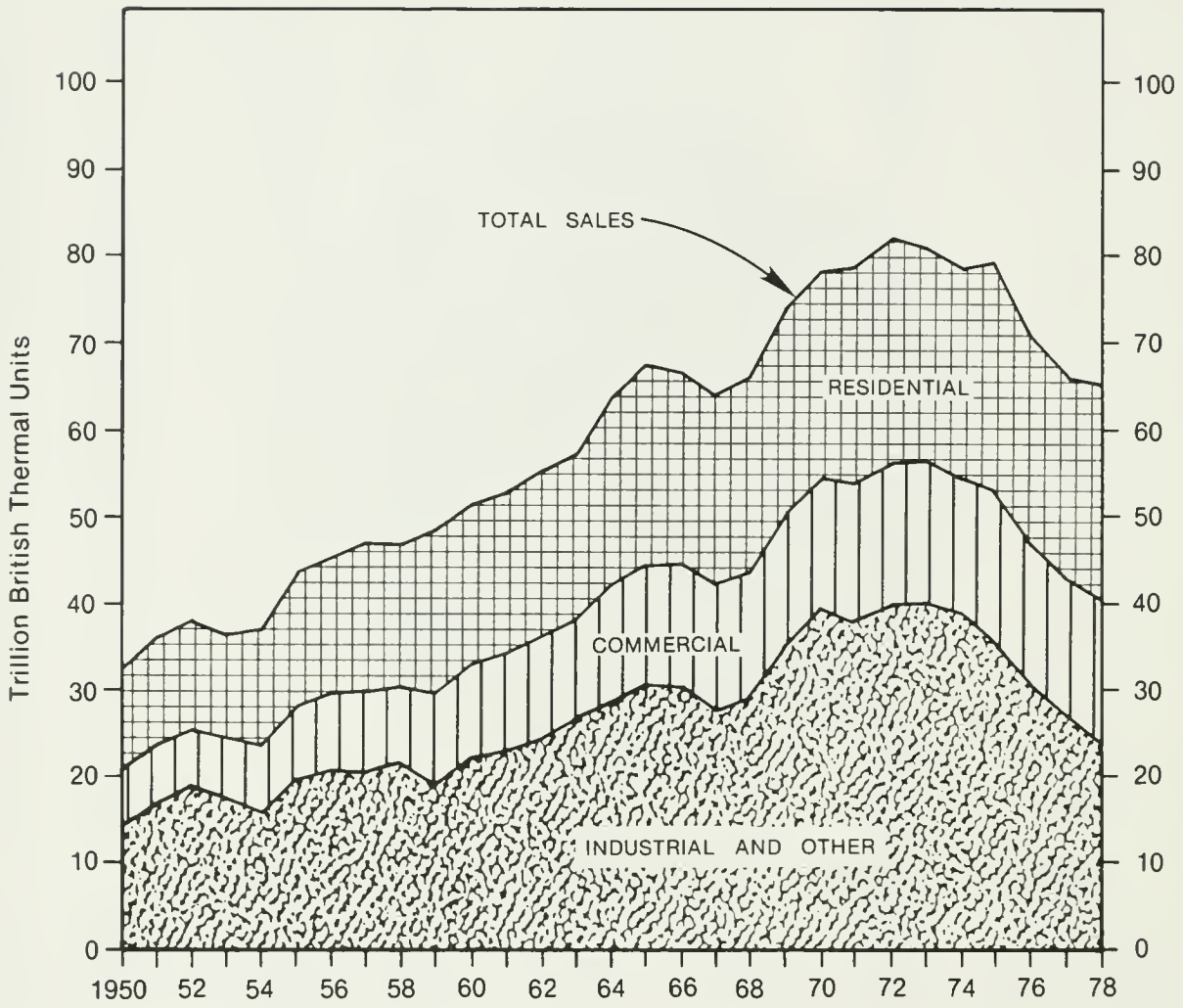

FIGURE 4.2 SALES OF NATURAL GAS IN MONTANA BY CONSUMING SECTOR, 1950-78

SOURCE: American Gas Association, *Gas Facts*, published annually, (1950-78).

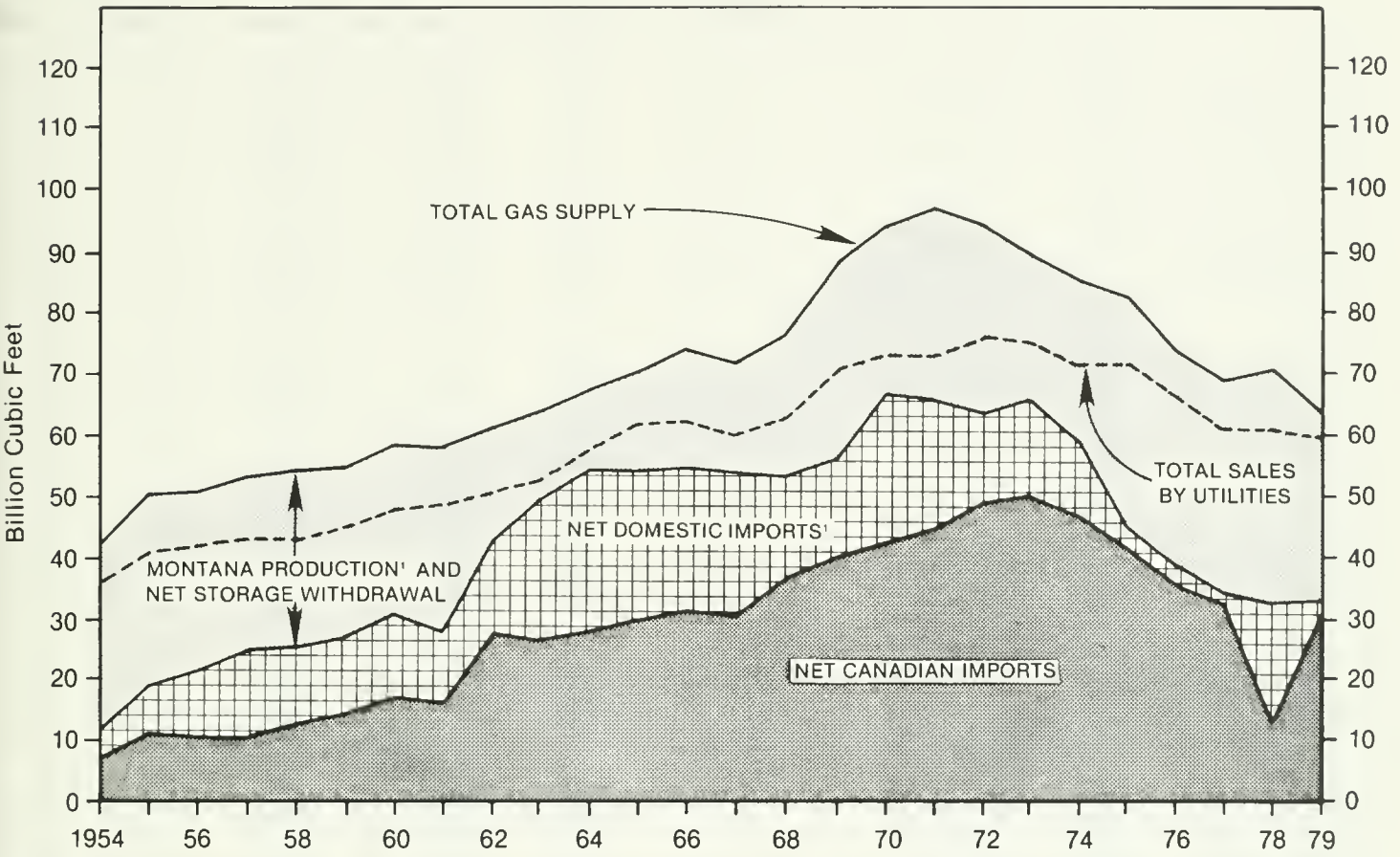

FIGURE 4.3 SUPPLY OF NATURAL GAS IN MONTANA BY SOURCE REGION, 1954-79

[1]Excludes production and export of natural gas by Northern Natural Gas Company (Tiger Ridge Area).

SOURCES: Production and Imports: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1954-79.

Sales: Annual reports submitted by the gas utilities to the Public Service Commission (1954-79); these data were supplemented and adjusted based on information provided by the utilities directly.

Storage injection figures were based on phone calls to utilities.

TABLE 4.4
SALES OF NATURAL GAS IN MONTANA BY GAS UTILITIES, 1950-79
(million cubic feet)

	MONTANA POWER COMPANY					MONTANA-DAKOTA UTILITIES				
	Residential and Commercial[1]	Industrial	Other[2]	Total[3]	% of Total Montana Sales	Residential and Commercial	Industrial	Other[4]	Total	% of Total Montana Sales
1950	7,909	8,852	NA	16,761	54	4,228	240	469	4,937	16
1951	8,076	12,970	NA	21,046	59	5,514	1,180	499	7,193	20
1952	8,435	13,760	NA	22,195	62	7,340	1,845	468	9,653	27
1953	8,229	13,624	NA	21,853	62	7,223	1,863	480	9,566	27
1954	8,737	12,225	NA	20,962	59	7,912	1,649	495	10,056	28
1955	11,231	15,511	NA	26,742	64	7,594	1,996	533	10,123	24
1956	11,100	15,584	NA	26,684	63	7,708	2,212	509	10,429	25
1957	12,584	15,527	NA	28,111	64	7,797	2,056	492	10,345	24
1958	12,391	15,173	NA	27,564	63	7,429	3,233	551	11,213	26
1959	14,401	12,629	NA	27,030	60	8,678	2,934	507	12,119	27
1960	14,533	15,462	NA	29,995	62	8,516	3,148	342	12,006	25
1961	14,517	16,654	NA	31,171	63	8,689	3,606	177	12,472	25
1962	15,133	18,080	NA	33,213	64	9,148	3,051	103	12,302	24
1963	14,893	19,666	NA	34,559	65	8,826	3,862	79	12,767	24
1964	16,853	20,958	NA	37,811	64	9,620	4,687	55	14,362	24
1965	17,977	22,195	NA	40,172	64	10,955	4,430	61	15,446	24
1966	17,731	23,058	NA	40,789	65	10,414	4,256	55	14,725	24
1967	18,027	20,766	NA	38,793	64	10,584	3,813	67	14,464	24
1968	19,063	21,650	NA	40,713	65	10,847	4,523	65	15,435	24
1969	19,891	25,536	NA	45,427	64	11,534	6,277	55	17,866	25
1970	20,398	26,006	NA	46,404	63	11,499	8,582	102	20,183	27
1971	18,956	25,581	1,422	45,959	63	11,612	8,317	139	20,068	28
1972	20,068	26,128	1,461	47,657	62	12,352	8,218	600	21,170	28
1973	19,771	25,915	1,464	47,150	62	11,525	8,685	1,415	21,623	28
1974	18,930	25,548	1,381	45,859	63	11,230	8,455	588	20,273	28
1975	19,883	23,448	1,491	44,822	62	12,785	7,244	586	20,615	28
1976	18,795	20,206	1,384	40,385	61	12,208	6,782	318	19,308	29
1977	18,412	17,863	1,312	37,587	61	11,975	5,666	218	17,859	29
1978	18,697	17,280	1,347	37,324	60	13,730	3,856	261	17,847	29
1979	19,142	16,118	1,369	36,629	61	13,271	3,537	172	16,981	28

[1]From 1950 to 1970, government and municipal sales appear in the commercial sector.
[2]Sales to government and municipal authorities for heating.
[3]Sales of natural gas to Canada are not included.
[4]"Other" includes company consumption and natural gas used in MDU electric generating plants at Baker, Glendive, Sidney, and Miles City; does not include unbilled customer consumption as part of a lease agreement.

TABLE 4.4 (continued)
SALES OF NATURAL GAS IN MONTANA BY GAS UTILITIES, 1950-79
(million cubic feet)

	GREAT FALLS GAS COMPANY					OTHER UTILITIES[6]		TOTAL SALES			
	Residential and Commercial	Industrial	Other[5]	Total	% of Total Montana Sales	Total for all Sectors	% of Total Montana Sales	Residential and Commercial[7]	Industrial	Other[8]	TOTAL
1950	2,509	208	53	2,770	9	6,481	21	21,127	9,300	522	**30,949**
1951	2,697	311	191	3,199	9	4,055	11	20,342	14,461	690	**35,493**
1952	2,566	228	333	3,127	9	852	2	19,193	15,833	801	**35,827**
1953	2,478	238	350	3,066	9	814	2	18,744	15,725	830	**35,299**
1954	2,795	255	400	3,450	10	892	2	20,336	14,129	895	**35,360**
1955	3,284	243	434	3,961	9	1,049	2	23,158	17,750	967	**41,875**
1956	3,361	204	396	3,961	9	1,019	2	23,188	18,000	905	**42,093**
1957	3,510	258	451	4,219	10	955	2	24,846	17,841	943	**43,630**
1958	3,365	268	475	4,108	9	1,067	2	24,252	18,674	1,026	**43,952**
1959	4,048	388	566	5,002	11	1,175	2	28,302	15,951	1,073	**45,326**
1960	3,928	512	516	4,956	10	1,152	2	28,129	19,122	858	**48,109**
1961	4,067	380	606	5,053	10	1,045	2	28,318	20,640	783	**49,741**
1962	4,092	371	752	5,215	10	1,078	2	29,451	21,502	855	**51,808**
1963	4,030	396	793	5,219	10	945	2	28,694	23,924	872	**53,490**
1964	4,446	480	847	5,773	10	1,018	2	31,937	26,125	902	**58,964**
1965	4,767	499	868	6,134	10	1,160	2	34,859	27,124	929	**62,912**
1966	4,593	490	846	5,929	9	1,125	2	33,863	27,804	901	**62,568**
1967	4,505	397	856	5,758	10	1,160	2	34,276	24,976	923	**60,175**
1968	4,504	424	852	5,780	9	1,074	2	35,488	26,597	917	**63,002**
1969	5,042	412	891	6,345	9	1,118	2	37,585	32,225	946	**70,756**
1970	4,926	378	902	6,206	8	1,010	1	37,833	34,966	1,004	**73,803**
1971	4,901	367	895	6,163	8	1,048	1	36,517	34,265	2,456	**73,238**
1972	5,185	353	884	6,422	8	1,105	1	38,710	34,699	2,945	**76,354**
1973	4,729	414	864	6,007	8	982	1	37,007	35,014	3,743	**75,762**
1974	4,504	412	807	5,723	8	936	1	35,600	34,415	2,776	**72,791**
1975	5,145	354	845	6,344	9	1,000	1	38,813	31,046	2,922	**72,781**
1976	4,875	237	892	6,004	9	762	1	36,640	27,225	2,594	**66,459**
1977	4,317	246	734	5,297	9	715	1	35,419	23,775	2,264	**61,458**
1978	4,818	196	826	5,840	9	824	1	38,069	21,332	2,434	**61,835**
1979	4,512	249	750	5,512	9	804	1	37,729	19,904	2,291	**59,926**

NOTE: Sales exclude sales for resale. The reports are for the company's fiscal year which ended during the year shown. (Not all companies operate on the same fiscal year.) Source documents at the Public Service Commission report data at sales pressure base, rather than at a uniform pressure base. When necessary, the data were converted to the uniform pressure base of 14.73 psia at 60 degrees F.

In 1979 there were 15 operating utilities, not all of which filed reports in Montana.

[5]Sales to Malmstrom AFB and other public authorities.

[6]"Other Utilities" include the following companies (listed in approximate descending order by volume of sales):
Cut Bank Gas Company: supplies gas to Cut Bank, MT; about 80 percent of the gas is purchased from Montana Power Company.
Shelby Gas Association: supplies gas to Shelby, MT; gas is purchased from Montana Power Company.
Consumers Gas Company: supplies gas to Ferdig, Oilmont, Sunburst, and Sweetgrass, MT; gas is purchased from Montana Power Company and Hardrock Oil Company through the Treasure State Pipeline Company.
Saco Municipal Gas Company: supplies gas to Saco, MT, from the town's own wells.

[7]All gas sales from "Other Utilities" are included under "Residential and Commercial" here.

[8]From 1950 to 1970, Montana Power Company sales to government and municipal authorities are included under "Residential and Commercial;" after 1970, under "Other."

SOURCE: Annual reports by gas utilities to the Montana Public Service Commission (1950-79), supplemented by information obtained directly from the utilities.

TABLE 4.5
AVERAGE ANNUAL NATURAL GAS PRICES[1] IN MONTANA, 1950-78
(cents per thousand cubic feet)

			DELIVERED			
	Wellhead[2]	Retail[3]	Residential	Commercial	Industrial	All Consumers
1950	5.3	28.7	47.3	32.8	14.2	30.1
1951	5.5	31.3	51.0	35.1	16.0	32.0
1952	6.1	31.8	50.7	35.2	19.2	32.4
1953	5.9	32.9	53.1	36.8	19.4	33.7
1954	6.8	37.5	58.9	41.5	20.1	38.8
1955	6.7	36.7	58.3	41.1	20.2	38.0
1956	6.8	36.8	58.5	41.2	20.6	38.2
1957	7.2	36.9	58.3	41.3	20.8	38.0
1958	6.8	38.4	64.7	44.3	21.8	40.1
1959	7.5	41.6	64.7	45.7	26.7	45.6
1960	7.1	41.6	66.0	46.4	27.4	45.4
1961	7.4	40.3	65.5	45.9	25.7	43.8
1962	7.4	41.9	75.2	50.6	25.1	46.4
1963	7.5	41.3	74.6	50.7	26.8	46.2
1964	7.8	45.7	76.3	53.3	30.3	49.5
1965	8.2	46.8	78.1	54.1	31.1	50.6
1966	8.3	45.8	77.9	54.3	30.4	49.5
1967	8.4	49.9	79.6	57.1	34.1	54.6
1968	9.1	50.9	82.2	60.3	32.6	55.4
1969	10.2	52.2	88.2	64.3	33.8	56.2
1970	10.3	52.9	90.7	65.9	33.9	57.2
1971	12.1	56.3	93.4	68.5	35.7	60.3
1972	12.3	58.7	96.5	69.1	38.1	63.0
1973	23.6	66.1	108.6	80.4	42.5	69.8
1974	25.3	75.8	111.9	92.6	58.0	80.4
1975	43.3	104.6	129.6	110.1	94.9	108.9
1976	44.5	111.7	136.4	118.7	99.7	116.4
1977	71.9	157.6	181.6	158.4	155.8	164.1
1978	84.7	166.1	189.4	164.6	164.2	172.0

[1]Average prices were computed by dividing the annual value of natural gas by the annual volume of natural gas.
[2]Average wellhead prices were computed using the marketed production figure for natural gas.
[3]Average retail prices were computed using the total consumption figure for natural gas.

SOURCES: U.S. Department of the Interior, Bureau of Mines, Mineral Industry Surveys, *Natural Gas Production and Consumption*, annual reports for 1950-75; U.S. Department of Energy, Energy Information Administration, *Natural Gas Production and Consumption*, annual reports for 1976-78.

TABLE 4.6
NATURAL GAS PRODUCTION AND CONSUMPTION IN MONTANA, 1950-78
(million cubic feet)

	Gross Withdrawal[1]	'Marketed Production	Consumption[2]	GAS DELIVERED					
				Residential	Commercial	Industrial[3]	Electric Utilities[4]	Other Consumers[5]	TOTAL
1950	40,975	38,972	38,333	12,596	7,536	13,979	892	NA	**35,002**
1951	36,897	36,225	37,276	12,287	7,379	15,047	884	NA	**35,598**
1952	29,140	28,557	41,545	12,263	7,794	17,422	998	NA	**38,476**
1953	28,245	27,736	40,953	12,029	7,544	16,559	1,237	NA	**37,368**
1954	30,532	30,087	41,002	13,314	8,277	14,909	601	NA	**37,101**
1955	28,841	28,100	47,861	15,335	9,427	18,240	630	NA	**43,631**
1956	26,852	25,706	48,305	15,235	9,314	18,226	876	NA	**43,651**
1957	30,830	28,481	54,868	16,725	10,116	18,429	2,954	NA	**48,224**
1958	30,830	27,836	54,725	14,970	9,546	18,960	3,183	NA	**46,659**
1959	32,819	30,575	51,898	17,310	11,124	16,438	1,005	NA	**45,877**
1960	37,792	33,235	54,271	16,825	11,820	19,558	339	NA	**48,543**
1961	36,798	33,716	57,465	17,086	12,140	21,404	354	NA	**50,985**
1962	32,621	29,791	62,952	17,078	12,302	21,713	3,692	NA	**54,785**
1963	31,228	29,862	66,969	17,274	12,569	24,613	3,285	NA	**57,740**
1964	26,653	25,050	67,282	18,792	13,059	26,419	2,437	NA	**60,706**
1965	29,800	28,105	70,895	19,908	14,110	28,310	1,992	NA	**64,320**
1966	36,048	30,685	73,829	19,690	14,068	29,571	2,977	NA	**66,306**
1967	31,610	25,866	65,782	19,756	13,090	22,584	502	2,426	**58,358**
1968	32,229	19,313	63,642	19,711	11,529	23,155	631	2,122	**57,148**
1969	68,064	41,229	78,988	21,463	14,239	31,917	1,520	2,354	**71,493**
1970	48,302	42,705	90,823	24,794	15,520	36,105	2,529	3,044	**81,992**
1971	38,136	32,720	89,021	25,379	15,734	36,800	1,075	2,375	**81,363**
1972	38,137	33,474	85,161	23,787	16,521	33,192	1,218	2,630	**77,348**
1973	60,931	56,175	91,148	24,923	16,786	37,898	2,322	2,357	**84,286**
1974	59,524	54,873	80,766	21,590	14,353	35,202	1,111	2,249	**74,505**
1975	44,547	40,734	80,351	24,097	16,233	31,631	1,059	2,421	**75,441**
1976	45,097	42,563	78,094	23,525	15,490	31,049	709	2,341	**73,114**
1977	48,181	46,819	70,956	21,596	14,626	27,260	953	2,080	**66,515**
1978	48,497	46,522	72,649	22,944	15,548	26,686	909	2,218	**68,305**

[1]"Gross withdrawal" is defined as marketed production, plus quantities used in repressuring, plus quantities vented and flared, from both gas wells and oil wells.

[2]"Consumption" is defined as total gas delivered to consumers, plus extraction loss, plus lease and plant fuel, plus pipeline fuel.

[3]Industrial use includes refinery use of gas but excludes pipeline fuel.

[4]The amount of electric utility use of gas was obtained from the Federal Power Commission.

[5]"Other consumers" includes delivery to municipalities and public authorities for institutional heating, street lighting, etc. This category was not used before 1967, having been included as "industrial" consumption before that year.

SOURCES: U.S. Department of the Interior, Bureau of Mines, Mineral Industry Surveys, *Natural Gas Production and Consumption*, annual reports for 1950-75; U.S. Department of Energy, Energy Information Administration, *Natural Gas Production and Consumption*, annual reports for 1976-78 (EIA-0131).

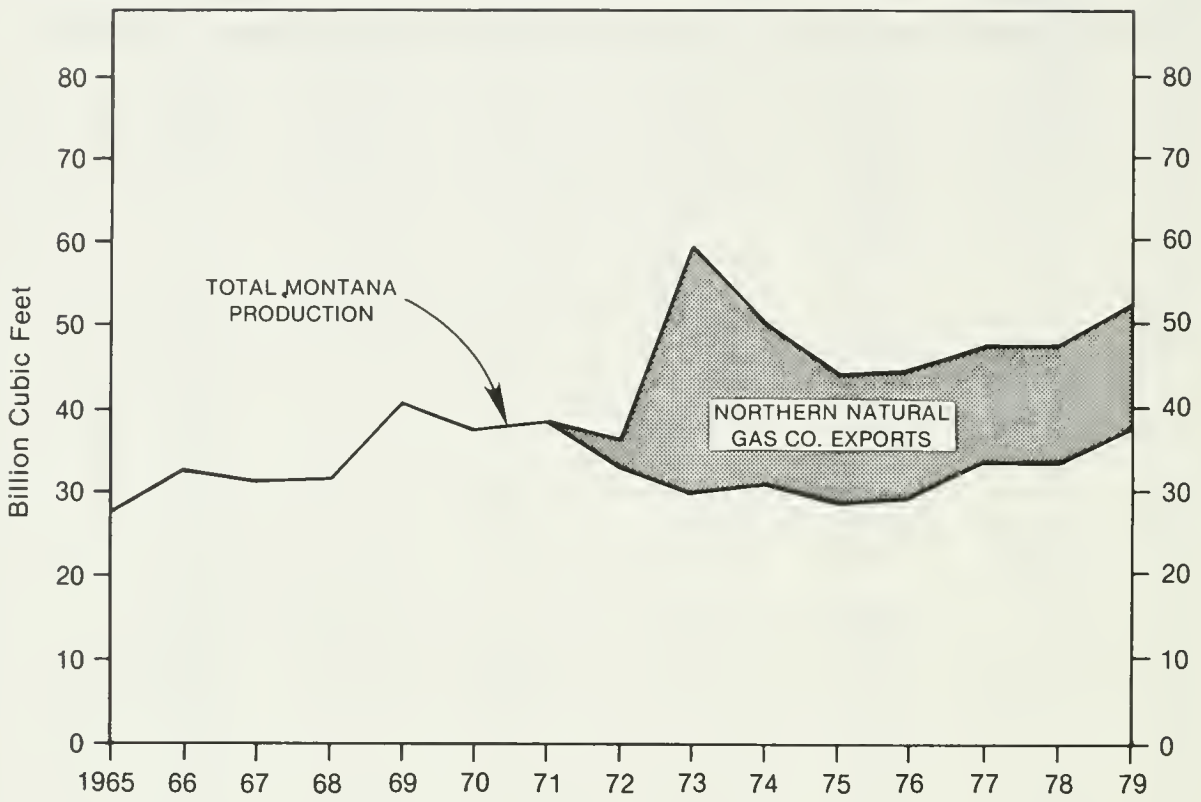

FIGURE 4.4 MONTANA NATURAL GAS PRODUCTION AND EXPORTS, 1965-79

SOURCE: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1965-79.

TABLE 4.7
CAPACITY AND PRODUCTION OF NATURAL GAS PROCESSING PLANTS IN MONTANA, 1961-79

AS OF DEC. 31 OF THE YEAR	NUMBER OF PLANTS	INPUT (million cubic feet per day)		AVERAGE PRODUCTION[1] (gallons per day)							OIL & GAS JOURNAL ISSUE
		Gas Capacity	Gas Through-put	Propane	Normal or Unsplit Butane	Liquefied Petroleum Gas Mix	Raw Natural Gas Liquid Mix	Debutanized Natural Gasoline	Other	TOTAL PRODUCTS	
1961	2	66.2	32.0	8,000	8,600	—	39,400	—	—	**56,000**	4/30/62
1962	2	65.8	27.4	9,400	8,000	—	37,000	—	—	**54,400**	3/25/63
1963	2	65.8	21.9	6,100	6,400	—	32,200	—	—	**44,700**	3/16/64
1964	2	55.8	23.3	6,800	7,600	—	38,700	—	—	**53,100**	3/29/65
1965	2	55.8	24.3	3,700	8,900	—	38,400	—	—	**51,000**	5/02/66
1966	5	66.8	32.9	30,800	9,200	6,000	77,240	—	—	**123,240**	3/20/67
1967	5	360.9	272.9	23,325	9,000	25,370	47,155	—	—	**104,850**	3/25/68
1968	5	107.8	82.5	32,500	9,000	15,000	54,900	—	—	**111,400**	4/07/69
1969	4	68.8	57.0	37,500	9,000	15,000	75,000	—	—	**136,500**	7/13/70
1970	7	75.8	42.7	40,800	11,000	—	60,500	35,680	—	**147,980**	7/12/71
1971	6	73.3	40.3	33,550	9,400	6,000	59,400	9,590	—	**117,940**	7/10/72
1972	4	44.3	29.6	24,900	9,400	—	43,500	9,500	—	**87,390**	7/09/73
1973	4	44.3	21.3	28,727	6,026	17,000	13,576	—	—	**65,329**	7/08/74
1974	4	45.3	20.6	30,786	8,260	—	9,000	10,466	17,000	**75,512**	7/14/75
1975	4	44.3	26.1	31,200	9,100	—	9,000	8,350	16,000	**73,650**	7/05/76
1976	8	56.3	28.5	30,300	9,600	24,000	16,000	22,600	—	**102,500**	7/11/77
1977	6	53.5	30.6	20,800	12,200	17,000	16,600	10,500	—	**77,100**	7/10/78
1978	7	54.5	26.1	21,700	12,900	11,000	16,500	10,000	—	**72,100**	6/25/79
1979	8	62.9	28.3	26,800	11,200	—	43,700	—	—	**81,700**	7/14/80

NOTE: Journal remarks: "Since this compilation includes cycling plants reprocessing pipeline gas, totals shown here for gas throughput do not relate directly to government data on total gas processed or sold. Similarly, liquids production figures are based on yearly average and do not necessarily reconcile with government data."

[1]Based on past 12 months.

SOURCE: *Oil and Gas Journal*, annual gas processing report issue (1961-79).

TABLE 4.8
INDUSTRIAL CONSUMPTION OF NATURAL GAS IN MONTANA BY STANDARD INDUSTRIAL CLASSIFICATION CODE, 1977-1979
(million cubic feet)

STANDARD INDUSTRIAL CLASSIFICATION		CONSUMPTION				
		1977			1978	1979
Group	Description	Firm	Interruptible	TOTAL	TOTAL	TOTAL
10-14	Mining	—	711	711	699	368
20	Food and Kindred Products	132	2,123	2,255	1,384	1,806
24	Lumber and Wood Products	471	840	1,311	867	758
26	Paper and Allied Products	—	3,601	3,601	3,854	3,782
27	Printing and Publishing	188	—	188	—	—
28	Chemicals and Allied Products	—	1,377	1,377	1,027	903
29	Petroleum and Coal Products	973	4,072	5,045	3,366	2,673
32	Stone, Clay, Glass, and Concrete Products	49	2,199	2,248	2,276	1,303
333-339	Primary Non-ferrous Metals	—	8,069	8,069	6,853	7,311
37	Transportation Equipment	—	314	314	339	364
Other SIC Classes & Not Classified or Unreported		688	—	688	991	821
TOTAL INDUSTRIAL CONSUMPTION		2,501	23,306	25,807	21,656	20,089

SOURCE: Gas Requirements Agency, University of Denver Research Institute, *United States Gas Consumption 1977*, September 1978, p. 10; Gas Requirements Agency, Mellon Institute of Research, Arlington, VA, 1978; Gas Requirements Agency, Mellon Institute of Research, *Actual Gas Consumption in the United States 1979*, September 1980, p. 26.

TABLE 4.9
PRODUCING GAS AND GAS CONDENSATE WELLS IN MONTANA, 1966-1978

Year	Number of Wells
1966	784
1967	648
1968	1,196
1969	1,098
1970	739
1971	1,056
1972	1,116
1973	1,118
1974	1,450
1975	1,235
1976	1,490
1977	1,438
1978	1,755

SOURCES: U.S. Department of the Interior, Bureau of Mines, Mineral Industry Surveys, *Natural Gas Production and Consumption*, annual reports (1966-75); U.S. Department of Energy, Energy Information Administration, *Natural Gas Production and Consumption*, annual reports for 1976-78 (EIA-0131).

5

CRUDE OIL AND PETROLEUM PRODUCTS

HIGHLIGHTS

- Montana's proved reserve of crude oil was estimated by the Oil and Gas Conservation Division of the Department of Natural Resources and Conservation to be 236 million barrels on January 1, 1980. This is 4 million barrels less than the 1979 reserve estimate.
- Thirty million barrels of crude oil were extracted in 1979, down slightly from the 1978 production level.
- The average well-head price of oil was $12.02 per barrel in 1979, compared to $9.25 per barrel in 1978.
- Montana refineries processed 51 million barrels of crude oil in 1979, up 6 percent from the previous year.
- During 1979, 13.3 million barrels of gasoline were manufactured in Montana, compared to 14.2 million barrels manufactured in 1978. The 1979 figure is 3 million barrels less than the record 1976 production of gasoline.
- In 1979, Montanans bought 11,737,000 barrels of gasoline, whereas in 1978 they bought 12,505,000 barrels of gasoline. The drop in gasoline sales may be attributed, in part, to gasoline conservation efforts.

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TABLE 5.1
PROVED RESERVES OF CRUDE OIL IN THE UNITED STATES AND MONTANA, 1950-1978
(thousand barrels)

	YEAR-END PROVED RESERVES[1]	
	United States	Montana
1950	25,268,398	111,272
1951	27,468,031	108,418
1952	27,960,554	156,181
1953	28,944,828	208,985
1954	29,560,746	272,394
1955	30,012,170	298,948
1956	30,434,649	331,414
1957	30,300,405	319,991
1958	30,535,917	337,799
1959	31,719,347	309,268
1960	31,613,211	266,687
1961	31,758,505	250,909
1962	31,389,223	248,860
1963	30,969,990	271,253
1964	30,990,510	251,620
1965	31,352,391	274,145
1966	31,452,127	281,608
1967	31,376,670	307,972
1968	30,707,117	345,117
1969	29,631,862	275,765
1970	39,001,335	241,529
1971	38,062,957	228,185
1972	36,339,408	241,248
1973	35,299,839	219,343
1974	34,249,956	207,389
1975	32,682,127	163,968
1976	30,942,166	152,670
1977	29,486,402	151,601
1978	27,803,760	140,466

[1]Proved reserves are the estimated amount of oil that geologic and engineering data indicate is recoverable from known reservoirs under present economic and operating conditions.

SOURCES: American Petroleum Institute (1950-76); American Gas Association, *Gas Facts*, 1977-78.

TABLE 5.2
ESTIMATE OF MONTANA CRUDE OIL PROVED RESERVES BY REGION, 1978-80
(million barrels)

Region[1]	AS OF JANUARY 1 1978	1979	1980
Northeast Montana	52.3	68.5	76.5
Southeast Montana	99.0	87.6	80.0
Central Montana	30.6	27.6	24.9
South Central Montana	10.0	13.3	12.5
Northern Montana	41.1	40.9	38.1
Miscellaneous	0	2.1	4.1
TOTAL	**233.0**	**240.0**	**236.0**

[1]See Figure 5.1 for a map showing regional boundaries.

SOURCE: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1978-80.

TABLE 5.3
CRUDE OIL PRODUCTION AND AVERAGE WELLHEAD PRICES IN MONTANA, 1950-79

	Production of Crude Oil[1] (thousand barrels)	Wellhead Price[2] (dollars per barrel)	Production of Crude Oil[3] (thousand barrels)	Wellhead Price[3] (dollars per barrel)
1950	8,109	2.52	7,841	2.47
1951	8,958	2.47	8,814	2.35
1952	9,606	2.25	9,527	2.26
1953	11,920	2.18	11,793	2.23
1954	14,195	2.20	14,023	2.22
1955	15,654	2.26	16,548	2.18
1956	21,760	2.58	21,262	2.47
1957	27,122	2.70	26,658	2.43
1958	27,957	2.65	27,816	2.62
1959	29,857	2.56	29,985	2.50
1960	30,240	2.41	29,937	2.45
1961	30,906	2.42	30,499	2.42
1962	31,648	2.42	31,270	2.44
1963	30,870	2.44	30,364	2.44
1964	30,647	2.43	30,241	2.45
1965	32,778	2.43	32,089	2.44
1966	35,380	2.44	34,734	2.45
1967	34,959	2.50	34,316	2.50
1968	48,460	2.57	47,152	2.56
1969	43,954	2.69	44,446	2.76
1970	37,879	2.78	38,058	2.83
1971	34,599	3.01	34,625	3.05
1972	33,904	3.07	34,572	2.99
1973	34,620	3.33	34,584	3.85
1974	34,554	6.65	34,629	6.82
1975	32,844	7.83	32,815	7.83
1976	32,814	8.42	32,057	8.49
1977	32,680	8.58	30,696	9.07
1978	30,467	9.25	30,935	9.31
1979	29,957	12.02	30,286	13.00

NOTE: Average wellhead prices were computed by dividing the gross value of production by the number of barrels extracted.

[1]SOURCE: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1950-79.
[2]SOURCE: U.S. Department of Energy, Energy Information Administration.
[3]SOURCE: Montana Department of Revenue, Property Assessment Division.

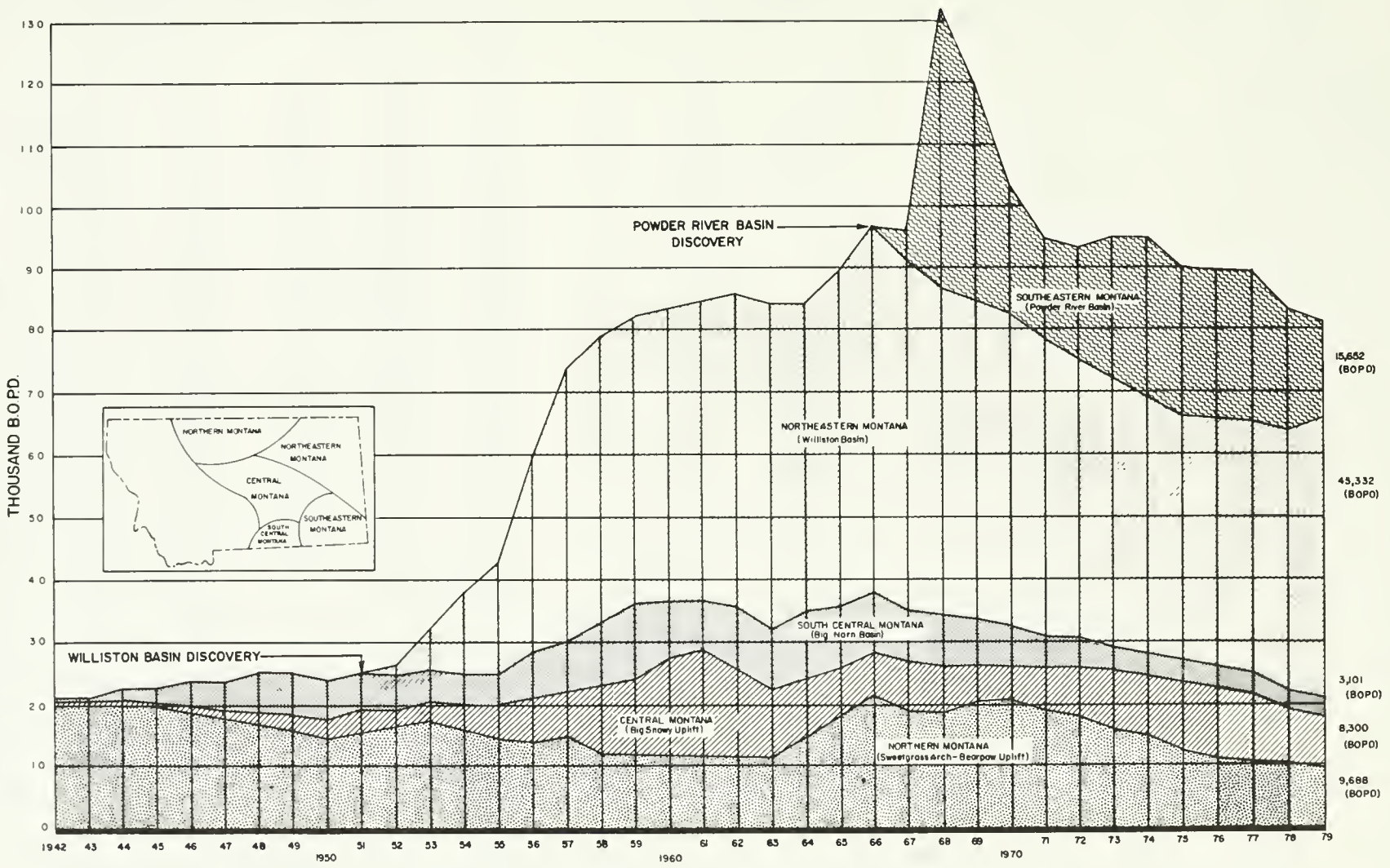

FIGURE 5.1 CRUDE OIL PRODUCTION, 1942-79

NOTE B.O.P.D. means barrels of oil per day.

SOURCE. Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review,* 1979, p. 3

TABLE 5.4
CRUDE OIL PROCESSED IN MONTANA REFINERIES BY SOURCE, 1953-79
(thousand barrels)

	CONTINENTAL OIL (Billings)				EXXON[1] (Billings)				FARMERS UNION (Laurel)				
	Montana	Wyoming	Canada	Total[2]	Montana	Wyoming	Canada	Total	Montana	Wyoming	North Dakota	Canada	Total
1953	337	2,753		3,089	1,067	6.277		7,344	949	3,083			4,032
1954	623	2,277		2,909	1,641	5,355		6,995	1,618	3,234			4,853
1955	1,268	2,077		3,358	1,778	5,225		7,004	1,446	3,908			5,354
1956	560	2,671		3,231	1,352	7,095		8,447	1,916	3,936			5,852
1957	681	2,795		3,475	1,777	6,602		8,378	1,830	4,249			6,078
1958	807	2,313		3,120	2,316	4,445		6,792	1,395	3,113			4,509
1959	971	2,793		3,765	4,414	6,760		11,173	1,215	5,589			6,804
1960	728	3,422		4,151	3,634	6,175		9,808	2,008	4,786			6,794
1961	729	3,955		4,685	3,583	5,991		9,574	1,859	4,092			5,951
1962	1,954	3,434	185	5,573	2,519	9,496	12	12,028	2,754	3,740			6,495
1963	2,418	2,241	1,046	5,705	2,200	8,739	495	11,435	2,974	3,425			6,699
1964	3,732	1,548	3,692	8,973	2,275	9,530	288	12,093	2,723	4,603			7,326
1965	2,697	3,068	4,593	10,359	2,293	9,659	37	11,989	2,635	3,665			6,300
1966	1,773	4,148	4,674	10,595	2,318	9,557		11,875	2,079	4,415			6,494
1967	1,813	3,936	5,052	10,802	2,073	11,851		13,924	1,833	5,606			7,439
1968	1,714	1,995r	10,125r	13,834	1,451	12,387	222	14,060	1,264	6,533			7,797
1969	1,637	3,443r	8,482r	13,562	1,240	11,964	360	13,564	1,539	6,723			8,261
1970	1,351	3,345r	9,123r	13,820	1,090	11,062	2,381	14,532	1,355	4,935		2,404	8,695
1971	1,170	3,592r	10,070r	14,833	1,046	10,997	2,564	14,607	1,526	5,143		3,369	10,038
1972	1,119	3,796r	12,240r	17,154	849	10,821	3,706	15,376	1,703	4,625		4,229	10,556
1973	1,046	3,272r	12,170r	16,488	1089	10,011	5,568	16,668	1,672	4,952		5,299	11,922
1974	1,340	4,299r	11,113r	16,752	744	8,753	4,870	14,367	1,599	3,897		5,697	11,192
1975	1,703	5,478r	9,291r	16,472	879	8,615	5,606	15,100	1,466	5,373		4,339	11,178
1976	1,846	4,495	11,125	17,466	1,005	7,719	5,818	14,542	1,200	6,097		5,354	12,651
1977	3,153	3,558	10,064	16,776	521	8,211	5,234	13,967	903	6,478	193	5,105	12,679
1978	2,970	3,404	9,057	15,431	519	9,432	4,413	14,364	1,019	4,677	64	7,351	13,111
1979	2,937	3,943	10,385	17,266	573	9,911	5,422	15,906	810	4,513		6,932	12,254

NOTE: The differences between the sums of component figures and the totals as reported are due to changes in refinery storage.

[1]Formerly Carter Oil (1953-59) and Humble Oil (1960-72).
[2]Includes 9,000 barrels from South Dakota in 1954 and 13,000 barrels from South Dakota in 1955.

r Revised by the Montana Energy Advisory Council.

SOURCE: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1953-79.

TABLE 5.4 (continued)
CRUDE OIL PROCESSED IN MONTANA REFINERIES BY SOURCE, 1953-79
(thousand barrels)

	BIG WEST OIL (Kevin)			PHILLIPS (Great Falls)			TESORO[3] (Wolf Point)			WESTCO[4] (Cut Bank)		
	Montana	Canada	Total	Montana	Canada	Total	Montana	Canada	Total[5]	Montana	Canada	Total
1953	686		686	857		857				1,305		1,305
1954	652		652	839		839				1,252		1,252
1955	705		705	874		874				1,279		1,279
1956	729		729	997	7	1,004	86		86	1,257	47	1,304
1957	742		742	831	16	847	98		98	1,258	54	1,312
1958	751		751	995		995	45		45	1,203	12	1,215
1959	805		805	1,226		1,226	55		55	1,175	4	1,180
1960	775		775	1,298		1,298	17		17	1,142	21	1,162
1961	831		831	1,318		1,318				1,099	14	1,114
1962	852	3	855	1,436		1,436				1,050	41	1,091
1963	916		916	1,616		1,616				1,130	11	1,141
1964	920		920	1,491		1,491	78		78	880	21	901
1965	1,034		1,034	1,500		1,500	508		508	1,134	24	1,158
1966	765		765	1,619		1,619	681		681	1,159	9	1,169
1967	967		967	1,770		1,770	747		747	1,191		1,191
1968	1,290		1,290	1,690		1,690	820		820	1,258		1,258
1969	1,101		1,101	1,609		1,609	861		861	1,274		1,274
1970	1,207		1,207	1,691		1,691	806		806	1,388		1,388
1971	1,136		1,136	1,955		1,955	843		843	1,371		1,371
1972	523r	705r	1,228r	2,120		2,120	765		765	954r	276r	1,230r
1973	675r	784r	1,469	2,220		2,220	668		668	1,057r	464r	1,513r
1974	519r	940r	1,459	2,056	81	2,136	590	23	613	1,142r	392r	1,534r
1975	398r	820r	1,218r	1,724	433	2,158	687	4	690	1,145r	166r	1,311r
1976	565	658	1,223	1,537	539	2,076	959		959	1,406		1,406
1977	110	200	310	1,808	317	2,126	82		82	1,524		1,524
1978				1,571	548	2,119				1,807		1,807
1979				1,374	840	2,214				1,645		1,645

NOTE: The differences between the sums of component figures and the totals as reported are due to changes in refinery storage.

[3]Formerly the Texas-Calgary Co. (1956-58) and Texstar Petroleum (1959-64).
[4]Formerly Union Oil Company (1953-70).
[5]Kenco refining reported separately beginning in 1977.

r Revised by the Montana Energy Advisory Council.

SOURCE: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1953-79.

TABLE 5.4 (continued)
CRUDE OIL PROCESSED IN MONTANA REFINERIES BY SOURCE, 1953-79
(thousand barrels)

	JET FUEL REFINERY (Mosby)			KENCO (Wolf Point)			DIAMOND ASPHALT (Chinook)			OTHER REFINERIES[6]	
	Montana	Wyoming	Total	Montana	North Dakota	Total	Montana	Canada	Total	Montana	Total
1953	26		26							2,272	2,272
1954	175		175				74		74	2,161	2,161
1955	127		127				241		241	2,139	2,139
1956	113	18	131				215	33	249	1,828	1,828
1957	138	20	158				195	10	205	1,673	1,685[7]
1958	121	5	127				202		202	1,299	1,299
1959	179		179				277		277	595	595
1960	116		116				218		218	595	595
1961	110		110				236	19	255	31	31
1962	51	37	92[8]				186	22	207	373	373
1963	326	40	366				148		148	70	70
1964	57		57				95		95	41	41
1965	58		58				111		111		
1966	66		66				165		165		
1967	65		65				173		173		
1968	30		30				173		173		
1969	30		30				174		174		
1970	34		34				158		158		
1971	25		25				190		190		
1972	19		19				144		144		
1973	7		7				3		3		
1974											
1975											
1976											
1977				826	7	833					
1978				961	5	966					
1979				1,329	6	1,336					

NOTE: The differences between the sums of component figures and the totals as reported are due to changes in refinery storage.

[6]Includes Modern Oil Company (1953-54), Texaco Incorporated (1953-60), Unity Petroleum Company (1957-58), PetroFuels Company (1961-64), and North Star Refinery (1964).
[7]Includes 12,000 barrels to Unity Petroleum Company from Canada.
[8]Includes 4,000 barrels from Canada.

SOURCE: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1953-79.

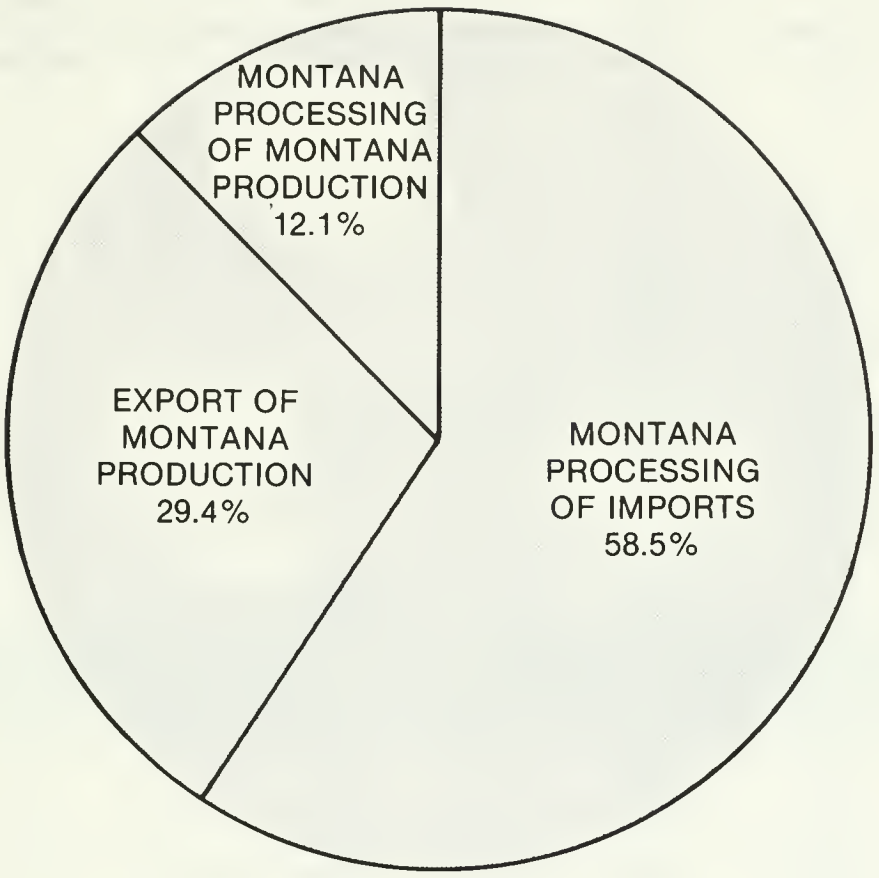

FIGURE 5.2 SUPPLY OF CRUDE OIL IN MONTANA, 1979

SOURCE: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1979.

TABLE 5.5
TOTAL CRUDE OIL REFINED IN MONTANA BY SOURCE, 1953-79
(thousand barrels)

	MONTANA		WYOMING		CANADA		NORTH DAKOTA		
	Crude Oil Refined in Montana	Percentage of Total	Crude Oil Refined in Montana	Percentage of Total	Crude Oil Refined in Montana	Percentage of Total	Crude Oil Refined in Montana	Percentage of Total	TOTAL[1]
1953	7,497	38.3	12,112	61.7	0	0.0			19,609
1954	9,034	45.4	10,865	54.5	0	0.0			19,909
1955	9,858	46.8	11,210	53.1	0	0.0			21,081
1956	9,053	39.6	13,720	60.0	88	0.4			22,861
1957	9,222	40.1	13,665	59.5	92	0.4			22,979
1958	9,165	39.4	14,089	60.5	12	0.1			23,265
1959	10,913	41.9	15,141	58.1	4	0.0			26,059
1960	10,531	42.3	14,383	57.7	21	0.1			24,935
1961	9,797	41.0	14,038	58.8	33	0.1			23,869
1962	11,175	39.7	16,708	59.4	266	0.9			28,149
1963	11,798	42.0	14,745	52.5	1,553	5.5			28,097
1964	12,292	38.4	15,714	49.1	4,002	12.5			32,007
1965	11,971	36.2	16,416	49.7	4,654	14.1			33,041
1966	10,626	31.8	18,120	54.2	4,684	14.0			33,429
1967	10,632	28.7	21,393	57.7	5,052	13.6			37,078
1968	9,690	23.7	20,915r	51.0	10,347r	25.2			40,951
1969	9,465	23.4	22,130r	54.7	8,843r	21.9			40,438
1970	9,080	21.5	19,342r	45.7	13,908r	32.8			42,330
1971	9,262	20.6	19,732r	43.8	16,003r	35.6			44,997
1972	8,194r	16.9	19,241r	39.6	21,156r	43.5			48,591r
1973	8,437r	16.6	18,235r	35.8	24,295r	47.7			50,967r
1974	7,989r	16.6	16,949r	35.3	23,115r	48.1			48,053
1975	8,002r	16.6	19,465r	40.4	20,690r	43.0			48,157r
1976	8,517	16.9	18,311	36.4	23,494	46.7			50,322
1977	8,928	18.5	18,248	37.8	20,921	43.3	200	0.4	48,297
1978	8,848	18.5	17,513	36.6	21,369	44.7	69	0.1	47,799
1979	8,668	17.1	18,368	36.3	23,578	46.6	6	0.0	50,620

NOTE: The differences between the sums of component figures and the totals as reported are due to changes in refinery storage.

Data originally reported by the Montana Oil and Gas Conservation Division have been revised on the basis of further information received from individual refineries. The Oil and Gas Conservation Division data originally understated Canadian inputs and overstated Wyoming inputs to the Continental Oil refinery, at least for the years 1968-75. Canadian inputs to the Big West Oil and Westco refineries were apparently not reported to the Oil and Gas Conservation Division. Revised data are available only for the years 1972-75, but it is likely that Canadian inputs to these two refineries were significant before 1972.

[1]Includes 9,000 barrels from South Dakota in 1954 and 13,000 barrels from South Dakota in 1955.

r Revised by the Montana Energy Advisory Council.

SOURCE: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1953-79.

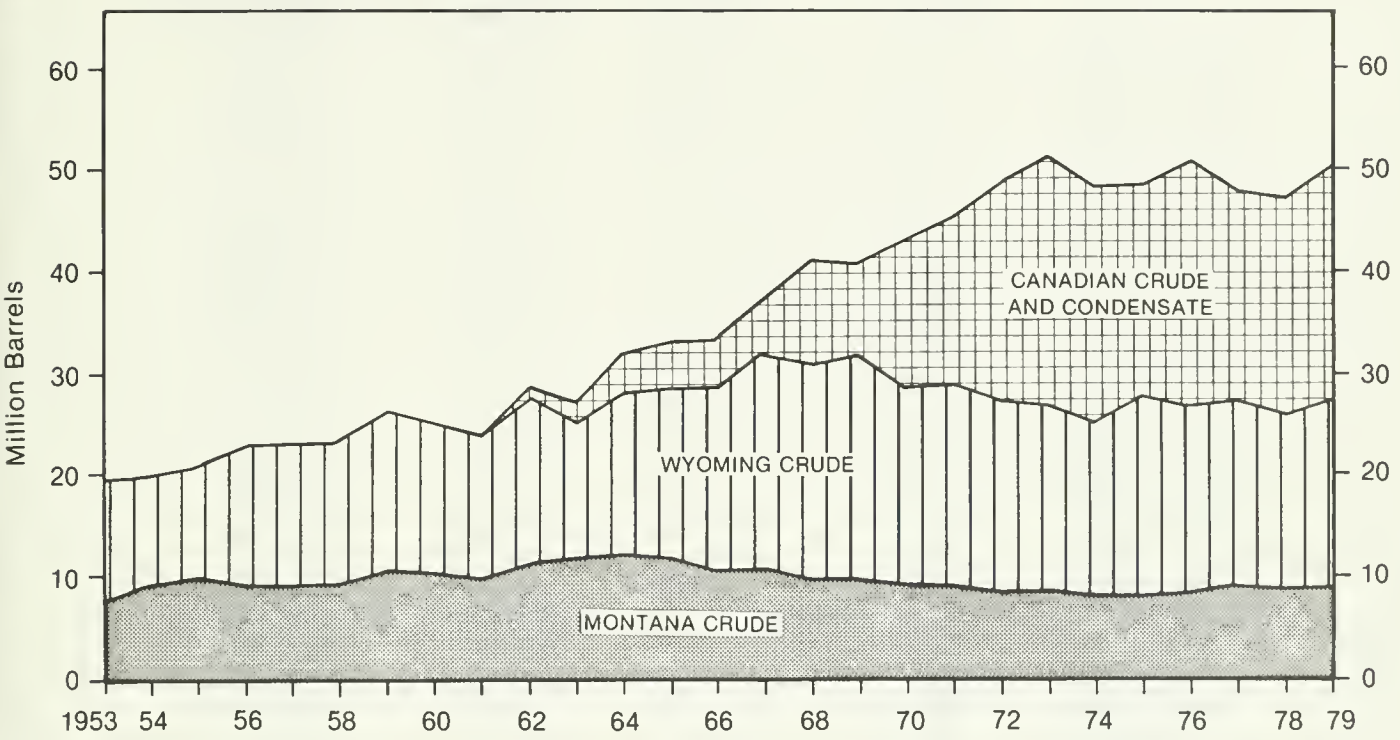

FIGURE 5.3 PETROLEUM REFINED IN MONTANA BY SOURCE, 1953-79

NOTE: North Dakota crude oil refined in Montana in 1977, 1978, and 1979 is not shown due to its small volume.

SOURCE: Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, *Annual Review*, 1953-79.

TABLE 5.6
CONSUMPTION OF MOTOR FUELS IN MONTANA, 1950-78
(thousand barrels)

	HIGHWAY USE OF MOTOR FUEL			Nonhighway Use of Motor Fuel	Losses Due to Evaporation, Handling, etc.	TOTAL CONSUMPTION OF MOTOR FUEL
	Gasoline	Diesel and LPG	Total			
1950	4,027	181	4,208	1,262	83	**5,553**
1951	4,410	231	4,641	1,038	85	**5,764**
1952	4,482	295	4,777	1,370	92	**6,239**
1953	5,123	337	5,460	911	93	**6,464**
1954	4,870	405	5,275	1,401	96	**6,772**
1955	5,047	412	5,459	1,436	94	**6,989**
1956	5,569	421	5,990	1,271	103	**7,364**
1957	5,302	475	5,777	1,554	69	**7,400**
1958	5,703	513	6,216	1,193	70	**7,479**
1959	5,694	627	6,321	1,535	72	**7,928**
1960	5,772	648	6,420	1,666	75	**8,161**
1961	5,726	744	6,470	2,124	80	**8,674**
1962	6,525	722	7,247	986	87	**8,320**
1963	6,373	796	7,169	1,118	89	**8,376**
1964	6,504	840	7,344	1,016	86	**8,446**
1965	6,683	926	7,609	1,164	93	**8,866**
1966	7,063	1,030	8,093	970	90	**9,153**
1967	7,148	968	8,116	1,049	95	**9,260**
1968	7,654	1,089	8,743	967	96	**9,806**
1969	8,166	1,187	9,353	664	97	**10,114**
1970	8,397	1,384	9,781	944	101	**10,826**
1971	8,862	1,459	10,321	794	101	**11,216**
1972	9,393	1,646	11,039	1,004	104	**12,147**
1973	10,292	1,832	12,124	856	111	**13,091**
1974	9,810	1,737	11,547	758	106	**12,411**
1975	9,641	1,731	11,372	1,077	107	**12,556**
1976	10,693	2,073	12,765	1,099	119	**13,983**
1977	10,276	2,129	12,405	1,016	106	**13,526**
1978	12,170	2,389	14,559	908	124	**15,591**

NOTE: Motor fuel is defined as all gasoline covered by state motor fuel tax laws plus diesel fuel and LPG used in the propulsion of motor vehicles. Military use of motor fuel and all aviation fuel use are excluded in the Department of Transportation data. Figures for highway use of fuels may be understated because of refunds given on fuel for nonhighway use such as agriculture.

SOURCE: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics*, annual reports, 1950-78.

TABLE 5.7
PRODUCTION AND CONSUMPTION OF GASOLINE IN MONTANA, 1950-79
(thousand barrels)

	Gasoline Manufactured	Gasoline Imported	Gasoline Exported	Gasoline Sold
1950	6,981	513	2,057	5,438
1951	7,899	570	2,930	5,540
1952	8,235	611	2,902	5,944
1953	8,742	592	3,206	6,127
1954	8,452	632	2,716	6,369
1955	8,991	547	2,974	6,592
1956	10,106	543	3,711	6,929
1957	10,604	561	4,264	6,906
1958	11,438	548	5,081	6,966
1959	12,590	491	5,781	7,301
1960	12,129	475	5,090	7,513
1961	11,284	337	3,789	7,831
1962	12,596	406	4,294	8,707
1963	12,320	450	4,028	8,741
1964	12,591	289	4,214	8,666
1965	13,751	282	4,731	9,303
1966	13,910	185	4,952	9,143
1967	14,565	326	5,115	9,776
1968	14,320	223	5,183	9,360
1969	14,629	275	5,104	9,800
1970	13,007	194	3,952	9,249
1971	13,613	214	4,090	9,737
1972	14,390	219	4,251	10,358
1973	15,191	634	4,792	11,033
1974	14,923	229	4,495	10,657
1975	15,498	176	4,759	10,914
1976	16,281	212	4,771	11,626
1977	13,654	345	1,959	12,040
1978	14,171	418	2,094	12,505
1979	13,289	348	1,816	11,737

NOTE: In general, gasoline manufactured + gasoline imported − gasoline exported = gasoline sold. "Gasoline sold" figures may have been independently revised by the Department of Revenue, however, based on calculations from other Revenue source documents.

SOURCE: Montana Department of Revenue, Motor Fuel Tax Division.

TABLE 5.8
SALES OF PETROLEUM PRODUCTS IN MONTANA, 1950-79
(thousand barrels)

	Distillate Fuel Oil[1]	Residual Fuel Oil	Kerosine[2]	Liquefied Petroleum Gases
1950	2,478	4,222	231	211
1951	2,851	4,958	267	275
1952	3,063	4,220	277	324
1953	3,553	3,276	252	402
1954	3,755	1,751	261	537
1955	3,980	1,692	215	537
1956	4,219	1,646	213	610
1957	4,209	1,554	201	661
1958	3,642	1,643	303	296
1959	4,474	2,006	544	811
1960	4,713	2,022	476	737
1961	4,589	2,533	359	856
1962	5,522	3,049	265	819
1963	5,400	2,836	348	765
1964	5,684	2,356	651	931
1965	5,041	1,195	248	926
1966	5,802	1,371	117	1,165
1967	3,459	1,189	860	1,585
1968	4,119	1,495	816	1,685
1969	4,669	1,524	656	1,690
1970	4,823	1,249	376	1,327
1971	5,101	1,236	362	1,403
1972	6,121	1,485	383	1,704
1973	6,924	1,705	405	1,502
1974	7,646	2,290	174	1,465
1975	7,459	2,186	126	1,370
1976	8,383	2,549	80	1,420
1977	8,141	2,414	94	1,370
1978	8,114	2,665	95	1,662
1979	NA	NA	NA	861

NOTE: Some petroleum products are stored in secondary facilities, so sales figures do not necessarily equal consumption of those products during the given time period.

[1]Distillate fuel oil includes diesel fuel for both on- and off-highway use.
[2]Excludes kerosine-type jet fuel and includes kerosine used in lamps, tractors, cooking stoves, heating, etc.

SOURCES: Distillate Fuel Oil, Residual Fuel Oil, and Kerosine: U.S. Department of the Interior, Bureau of Mines, Mineral Industry Surveys, various titles including *Shipments of Fuel Oil and Kerosine* and *Sales of Fuel Oil and Kerosine*, annual reports, 1950-75; U.S. Department of Energy, Energy Information Administration, *Sales of Fuel Oil and Kerosine*, annual reports, 1976-78 (EIA-0113).

Liquefied Petroleum Gases: U.S. Department of the Interior, Bureau of Mines, Mineral Industry Surveys, various titles including *Sales of Liquefied Petroleum Gases and Ethane*, and *Shipments of Liquefied Petroleum Gases and Ethane*, annual reports, 1950-75; U.S. Department of Energy, Energy Information Administration, *Sales of Liquefied Petroleum Gases and Ethane*, annual reports, 1976-79 (EIA-0114).

TABLE 5.9
SALES OF RESIDUAL FUEL OIL IN MONTANA BY SECTOR, 1960-78
(thousand barrels)

Year	Heating	Industry	Electric Utility	Oil Company	Military	Railroads	Other	TOTAL
1960	354	439	2	817	70	299	41	**2,022**
1961	465	649	0	756	151	455	57	**2,533**
1962	1,011	568	0	931	86	385	68	**3,049**
1963	879	652	3	807	11	396	88	**2,836**
1964	503	664	53	712	9	299	116	**2,356**
1965	504	65	0	257	0	313	56	**1,195**
1966	482	56	45	342	118	263	65	**1,371**
1967	419	48	6	296	102	228	90	**1,189**
1968	419	102	23	681	56	185	29	**1,495**
1969	226	232	105	683	54	179	45	**1,524**
1970	183	109	9	792	45	74	37	**1,249**
1971	177	225	0	732	45	40	17	**1,236**
1972	209	227	16	967	32	32	2	**1,485**
1973	208	243	71	1,112	16	28	27	**1,705**
1974	376	465	3	1,307	80	44	15	**2,290**
1975	429	543	0	1,022	127	38	27	**2,186**
1976	858	562	0	962	147	0	20	**2,549**
1977	672	666	76	787	137	0	76	**2,414**
1978	802	818	0	817	148	0	80	**2,665**

NOTE: Some petroleum products are stored in secondary facilities, so sales figures do not necessarily equal consumption of those products during the given time period.

SOURCES: U.S. Department of the Interior, Bureau of Mines, Mineral Industry Surveys, various titles including *Shipments of Fuel Oil and Kerosine* and *Sales of Fuel Oil and Kerosine*, annual reports, 1960-75; U.S. Department of Energy, Energy Information Administration, *Sales of Fuel Oil and Kerosine*, annual reports 1976-78 (EIA-0113).

TABLE 5.10
SALES OF DISTILLATE FUEL OIL IN MONTANA BY SECTOR, 1960-78
(thousand barrels)

	Heating	Industry	Electric Utility	Oil Company	Military	Railroads	Other		TOTAL
							Diesel[1]	Total	
1960	902	141	0	7	57	2,241	1,312	1,365	**4,713**
1961	1,132	125	0	9	29	1,880	1,288	1,414	**4,589**
1962	1,324	220	0	12	26	1,720	1,946	2,220	**5,522**
1963	1,307	213	0	47	41	1,701	1,868	2,088	**5,400**
1964	1,080	361	0	39	38	1,833	2,050	2,330	**5,684**
1965	1,096	210	0	15	17	1,632	2,026	2,067	**5,041**
1966	1,092	257	0	22	0	1,464	2,662	2,967	**5,802**
1967	829	99	0	2	11	1,362	NA	1,156	**3,459**
1968	1,045	114	0	10	16	1,270	1,423	1,664	**4,119**
1969	1,197	148	14	60	20	1,469	1,537	1,761	**4,669**
1970	1,011	144	0	14	26	1,623	1,808	2,005	**4,823**
1971	1,095	136	0	18	22	1,674	2,026	2,156	**5,101**
1972	1,219	774	9	40	43	1,808	1,988	2,228	**6,121**
1973	1,337	890	159	31	29	1,918	NA	2,560	**6,924**
1974	1,346	1,090	49	35	28	2,302	2,430	2,796	**7,646**
1975	1,425	1,236	59	38	35	1,999	2,305	2,667	**7,459**
1976	1,789	1,156	117	41	12	1,955	2,876	3,313	**8,383**
1977	1,892	895	79	37	10	1,825	3,005	3,403	**8,141**
1978	2,097	872	87	59	8	1,954	2,797	3,037	**8,114**

NOTE: Some petroleum products are stored in secondary facilities, so sales figures do not necessarily equal consumption of those products during the given time period.

[1]Includes both on- and off-highway use.

SOURCES: U.S. Department of the Interior, Bureau of Mines, Mineral Industry Surveys, various titles including *Shipments of Fuel Oil and Kerosine* and *Sales of Fuel Oil and Kerosine*, annual reports, 1960-75; U.S. Department of Energy, Energy Information Administration, *Sales of Fuel Oil and Kerosine*, annual reports, 1976-78 (EIA-0113).

TABLE 5.11
SALES OF LIQUEFIED PETROLEUM GASES AND ETHANE IN MONTANA BY USE[1], 1960-79
(thousand barrels)

	Residential and Commercial Use	Internal Combustion Engine Use	Industrial Use[2]	Miscellaneous Uses[3]	TOTAL[4]
1960	596	125	16	0	**737**
1961	724	118	11	3	**856**
1962	659	132	27	1	**819**
1963	587	126	51	1	**765**
1964	771	102	58	0	**931**
1965	748	46	132	0	**926**
1966	891	65	209	0	**1,165**
1967	1,170	162	253	0	**1,585**
1968	1,257	188	240	0	**1,685**
1969	1,261	199	229	1	**1,690**
1970	1,044	99	179	5	**1,327**
1971	1,065	132	202	4	**1,403**
1972	1,287	199	211	7	**1,704**
1973	1,136	169	191	5	**1,502**
1974	1,207	139	119	0	**1,465**
1975	1,145	123	101	0	**1,370**
1976	1,168	114	138	0	**1,420**
1977	1,168	78	124	0	**1,370**
1978	1,502	77	59	24	**1,662**
1979	712	33	[5]	[5]	**861**

NOTE: Prior to 1979, the sample data collected were expanded to equal the calculated total available domestic supply of LPG; these figures generally overestimate the situation. Beginning in 1979, the published figures may be regarded as actual sales totals based on mandatory reports from all companies; these figures are no longer equivalent to the domestic supply figures for LPG and ethane.

Beginning in 1979, "farm-household" and "farm-internal combustion engine use" (tractors, irrigation pumps, etc.) were moved from the "Residential and Commercial Use" category and the "Internal Combustion Engine Use" category, respectively, to the "Miscellaneous Uses" category.

The reader is cautioned against comparing the 1979 data with the data from previous years.

[1]Excluding use in gasoline production.
[2]Includes refinery fuel use.
[3]Includes secondary recovery of petroleum, farm and/or agricultural uses, and use as synthetic natural gas feedstock.
[4]Includes use of LPG by gas utilities for distribution through mains (which amounted to 33,000 barrels in 1979), and withheld reports.
[5]Data withheld to avoid disclosure of individual company reports.

SOURCES: U.S. Department of the Interior, Bureau of Mines, Mineral Industry Surveys, various titles including *Sales of Liquefied Petroleum Gases and Ethane*, and *Shipments of Liquefied Petroleum Gases and Ethane*, annual reports, 1960-75; U.S. Department of Energy, Energy Information Administration, *Sales of Liquefied Petroleum Gases and Ethane*, annual reports, 1976-79 (EIA-0114).

TABLE 5.12
REFINERY RECEIPTS OF MONTANA CRUDE OIL BY STATE OF DESTINATION, 1973-79
(thousand barrels)

State of Destination	1973	1974	1975	1976	1977	1978	1979[1]
Colorado	793	573	256	82	222	532	89
Illinois	3,096	2,608	2,236	7,713	6,613	558	2,262
Indiana	13,720	14,435	10,907	7,422	5,741	10,634	8,165
Kansas	1,638	1,065	1,020	935	227	1,017	2,038
Michigan	0	0	0	0	224	0	139
Minnesota, Wisconsin	1,199	1,617	2,026	2,029	2,350	2,286	1,364
Missouri, Nebraska	0	80	654	1,268	1,080	190	166
North Dakota	1,065	1,374	1,304	1,285	1,229	1,261	1,245
Ohio	80	115	59	225	141	214	113
Oklahoma	0	50	0	0	0	0	0
Pennsylvania	346	360	769	368	314	361	385
Utah	0	0	784	0	0	0	0
Wyoming	654	361	498	26	748	1,503	1,460
Other States	0	0	0	1	8	2	0
TOTAL	**22,591**	**22,638**	**20,513**	**21,355**	**18,897**	**18,558**	**17,426**

[1]Preliminary data based on monthly reports; final data not yet available.

SOURCES: U.S. Department of the Interior, Bureau of Mines, Mineral Industry Surveys, *Crude Petroleum, Petroleum Products and Natural Gas Liquids*, annual reports, 1973-75; U.S. Department of Energy, Energy Information Administration, *Crude Petroleum, Petroleum Products and Natural Gas Liquids*, annual reports, 1976-79 (EIA-0109).

6

URANIUM

HIGHLIGHTS

- There were 251 uranium leases on state lands as of June 30, 1980.
- Total acreage leased increased by 176 percent, from 41,800 acres in January 1979, to 115,235.19 acres in June 1980.
- Eighteen companies held uranium prospecting permits in Montana as of July 9, 1980.
- Two-thirds of the prospecting permit acreage is in Carter County.
- Uranium prospecting permits covered 490.8 acres in July 1980, an increase of 145 percent over the 200.2 acres under permit in January 1979.
- The increase in acreage under prospecting permit or under lease (or both) does not reflect a major uranium strike in Montana. Rather, it reflects an increasing and renewed interest in Montana's uranium potential, triggered in part by recent activity in the uranium market and advances in technology.[1]

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[1]Comment by Ralph Driear, Environmental Coordinator, Montana Department of State Lands.

[2]Uranium reserve estimates are derived from drill hole and other data made available by the uranium companies. Separate evaluations are made of the quantities of uranium in cost categories of $30, $50, and $100 per pound U_3O_8 to cover the range of current economic interest. The costs used to assign the uranium reserves to these cost categories are "forward costs" comprising operating and capital costs, in present dollars, that will be incurred in producing the uranium. These include costs of labor, materials, electricity, royalties, payroll and production taxes, insurance, and applicable general and administrative costs. All previous expenditures (before the time of the estimate) for such items as property acquisition, exploration, mine development, mill construction, etc., are excluded in determining the appropriate cost category. Also excluded are income taxes, profit, and the cost of money. The various cost categories are independent of the market price at which the uranium would be sold.

Uranium reserves are the estimated quantities of uranium in known deposits of such grade, quantity, configuration, and depth that they can be recovered at or below a specified cost with state-of-the-art mining and processing technologies. Reserves are based on direct radiometric and chemical measurements of drill holes and other types of sampling of the deposits. Reserves are calculated individually for properties throughout the U.S. using company-provided data. Mineral grades and thicknesses, spatial relationships, depths below the surface, mining extraction methods, distances to milling facilities, and amenability of ores to processing are all considered in the evaluation. The amounts of uranium in ore that could be exploited at the forward-cost levels are calculated according to conventional engineering practices using all available engineering, geologic, and economic data.

DOE reserves have been adjusted for mining dilution and recovery but have not been adjusted for mill recovery. Thus, DOE reserves in the $30, $50, and $100 cost categories represent the amount of U_3O_8 in ore that is estimated to be recoverable at or below those costs in the mining process. Losses associated with milling processes have not been deducted.

SOURCE: U.S. Department of Energy, *Statistical Data of the Uranium Industry*, January 1, 1980, GJO-100(80).

TABLE 6.1
DISTRIBUTION OF URANIUM RESERVES[1] BY STATE
JANUARY 1, 1980

$30 RESERVES

State	Tons Ore	% U_3O_8	Tons U_3O_8	Percentage Distribution of U_3O_8	Number of Properties
New Mexico	255,700,000	0.13	338,500	52	140
Wyoming	243,300,000	0.08	188,000	29	217
Texas	75,300,000	0.06	43,300	7	117
Arizona, Colorado & Utah	61,000,000	0.09	57,000	9	535
Others[2]	22,700,000	0.08	18,200	3	136
TOTAL	**658,000,000**	**0.10**	**645,000**	**100**	**1,145**

$50 RESERVES

State	Tons Ore	% U_3O_8	Tons U_3O_8	Percentage Distribution of U_3O_8	Number of Properties
New Mexico	482,400,000	0.09	448,700	48	181
Wyoming	510,900,000	0.06	314,700	34	283
Texas	104,400,000	0.05	55,800	6	135
Arizona, Colorado & Utah	132,300,000	0.06	88,000	9	909
Others[2]	41,000,000	0.06	28,800	3	241
TOTAL	**1,271,000,000**	**0.07**	**936,000**	**100**	**1,749**

$100 RESERVES

State	Tons Ore	% U_3O_8	Tons U_3O_8	Percentage Distribution of U_3O_8	Number of Properties
New Mexico	670,500,000	0.08	512,300	46	183
Wyoming	944,700,000	0.04	419,900	37	293
Texas	131,900,000	0.05	61,000	5	137
Arizona, Colorado & Utah	149,700,000	0.06	93,700	8	958
Others[2]	61,200,000	0.06	35,100	4	250
TOTAL	**1,958,000,000**	**0.06**	**1,122,000**	**100**	**1,821**

[1]The amount of uranium in ore that could be produced from a deposit at maximum forward costs of $30, $50, and $100 per pound U_3O_8. Reserves reported at $30, $50, and $100 include reserves in all lower cost categories. (See footnote 2 page 75.)
[2]Includes Alaska, California, Idaho, **MONTANA**, Nevada, North Dakota, Oregon, South Dakota, and Washington.

SOURCE: U.S. Department of Energy, *Statistical Data of the Uranium Industry*, January 1, 1980, GJO-100 (80).

TABLE 6.2
URANIUM LEASES ON STATE LANDS BY COMPANY, 1976-80
(acres)

Company	County	April 1, 1976	Nov. 1, 1977	Jan. 2, 1979	June 30, 1980
Amoco Minerals	Carter				1,920.00
Anaconda Co.	Broadwater			982	
	Jefferson			2,240	
	Madison			480	480.00
Bur West	Broadwater				6,879.35
Conoco Inc./Continental Oil Co.	Jefferson	400		400	400.00
	Judith Basin		400		
D. H. Willson	Yellowstone			3,672	
Energy Reserves Group	Carter				800.00
	Fallon				453.12
	Madison				2,880.00
E. O. Larson	Beaverhead	440	440	440	440.00
Exxon	Beaverhead				13,043.20
	Broadwater	1,080			2,240.00
	Carter	2,092	1,252		1,280.00
	Custer				560.00
	Deer Lodge				1,280.00
	Gallatin				3,920.00
	Granite				638.78
	Jefferson				1,402.74
	Madison				7,854.72
	Powder River				5,760.00
	Powell				4,132.01
	Silver Bow				4,621.20
Felmont Oil Corp.	Carter	1,600	1,600		
	Fallon	480	480		
Frontier Resources, Inc.	Carter	640	640	640	
Gulf	Musselshell	4,480			
Homestake Mining Co.	Carter	1,280	960	960	960.00
	Madison				640.00
Kerr McGee Corp.	Carter	6,907	6,728	6,907	4,327.76
Lucky McUranium Corp.	Beaverhead		7,107		
	Gallatin		2,080	2,080	
	Jefferson		7,126		
	Madison			1,119	
	Meagher		2,560	2,560	
McMahon-Bullington	Carter			1,920	1,920.00
Mobil Oil Corp.	Carter	800	800	800	
Montana Nuclear Corp.	Carter	1,920	1,920	1,920	
Pathfinder Mines Corp.	Beaverhead				7,106.98
	Gallatin				799.00
	Jefferson				5,557.61
	Madison				1,000.00
	Meagher				1,280.00

TABLE 6.2 (continued)
URANIUM LEASES ON STATE LANDS BY COMPANY, 1976-80
(acres)

Company	County	April 1, 1976	Nov. 1, 1977	Jan. 2, 1979	June 30, 1980
Pioneer Nuclear, Inc.	Blaine		840		
	Hill		1,880		
Placer Amex Inc.	Jefferson				1,100.00
Resources Assoc./Alaska	Blaine				1,516.20
	Gallatin				5,854.99
	Jefferson				680.40
	Lewis & Clark				160.00
	Madison				2,080.00
Rexcon, Inc.	Cascade				2,445.00
	Chouteau				1,360.00
	Judith Basin				5,178.54
Sabine Production Co.	Stillwater		9,120	11,840	
	Sweet Grass		320	320	
St. Joe American Co.	Lewis & Clark		1,120	1,120	2,040.00
Uranerz, U.S.A.	Beaverhead				640.00
	Deer Lodge				480.00
	Gallatin				6,031.13
	Silver Bow				480.00
Uranium Resources, Inc.	Carter				612.46
Utah International, Inc.	Beaverhead	7,107			
	Broadwater	2,480			
	Gallatin	2,080			
	Jefferson	7,126			
	Madison	1,608			
	Meagher	2,560			
William Bateman	Powder River			1,280	
Wyoming Mineral Corp.	Chouteau		120	120	
	Golden Valley	640			
	Judith Basin	3,437			
	McCone		640		
TOTAL		**49,157**	**48,133**	**41,800**	**115,235.19**

NOTE: Data not available for federal and private lands.

SOURCE: Montana Department of State Lands, Mineral Lease Bureau, including personal communications from Ethel Schenk, January 1977 and July 1980.

TABLE 6.3
URANIUM LEASES ON STATE LANDS BY COUNTY, 1976-80
(acres)

County	April 1, 1976	Nov. 1, 1977	Jan. 2, 1979	June 30, 1980
Beaverhead	7,547	7,547	440	21,230.18
Blaine		840		1,516.20
Broadwater	3,560		982	9,119.35
Carter	15,239	13,900	13,147	11,820.22
Cascade				2,445.00
Chouteau		120	120	1,360.00
Custer				560.00
Deer Lodge				1,760.00
Fallon	480	480		453.12
Gallatin	2,080	2,080	2,080	16,605.12
Golden Valley	640			
Granite				638.78
Hill		1,880		
Jefferson	7,526	7,126	2,640	9,140.75
Judith Basin	3,437	400		5,178.54
Lewis & Clark		1,120	1,120	2,200.00
Madison	1,608		1,599	14,934.72
McCone		640		
Meagher	2,560	2,560	2,560	1,280.00
Musselshell	4,480			
Powder River			1,280	5,760.00
Powell				4,132.01
Silver Bow				5,101.20
Stillwater		9,120	11,840	
Sweet Grass		320	320	
Yellowstone			3,672	
TOTAL	**49,157**	**48,133**	**41,800**	**115,235.19**

NOTE: Data not available for federal and private lands.

SOURCE: Montana Department of State Land, Mineral Lease Bureau, including personal communications from Ethel Schenk, January 1977 and July 1980.

TABLE 6.4
URANIUM PROSPECTING PERMITS BY COUNTY
JULY 9, 1980

County	Acres
Beaverhead	7.9
Broadwater	24.3
Carbon	29.7
Carter	329.0
Chouteau	3.8
Deer Lodge	1.6
Fergus	0.4
Gallatin	1.5
Granite	0.2
Jefferson	15.8
Judith Basin	8.8
Lewis & Clark	36.2
Madison	18.3
Mineral	6.6
Powder River	0.3
Powell	0.6
Sanders	4.0
Silver Bow	1.8
TOTAL	**490.8**

SOURCE: Montana Department of State Lands, Reclamation Division, Coal and Uranium Bureau, personal communication from Susan McAnally, July 1980.

TABLE 6.5
URANIUM PROSPECTING PERMITS BY COMPANY
JANUARY 15, 1979

Permit Holder	County(s)	Acres
Anaconda Company	Broadwater & Jefferson	1.8
Anschutz Uranium Corporation	Carbon	24.0
Continental Oil Company	Jefferson & Mineral	16.6
Everest Exploration Company	Jefferson	1.0
Exxon Company U.S.A.	Powder River, Carbon & Carter	12.2
Frontier Resources, Incorp.	Carter	4.4
George E. Guay	Carbon	1.0
Kerr-McGee Corporation	Carter	105.6
Montana Bureau of Mines and Geology	Missoula and Ravalli	1.2
Sabine Production Company	Stillwater	15.0
St. Joe American Corporation	Lewis & Clark and Madison	7.4
Uranium Resources, Inc.	Carter	10.0
TOTAL		**202.2**

SOURCE: Montana Department of State Lands, Reclamation Division, Coal and Uranium Bureau, personal communication from Susan McAnally, January 1, 1979.

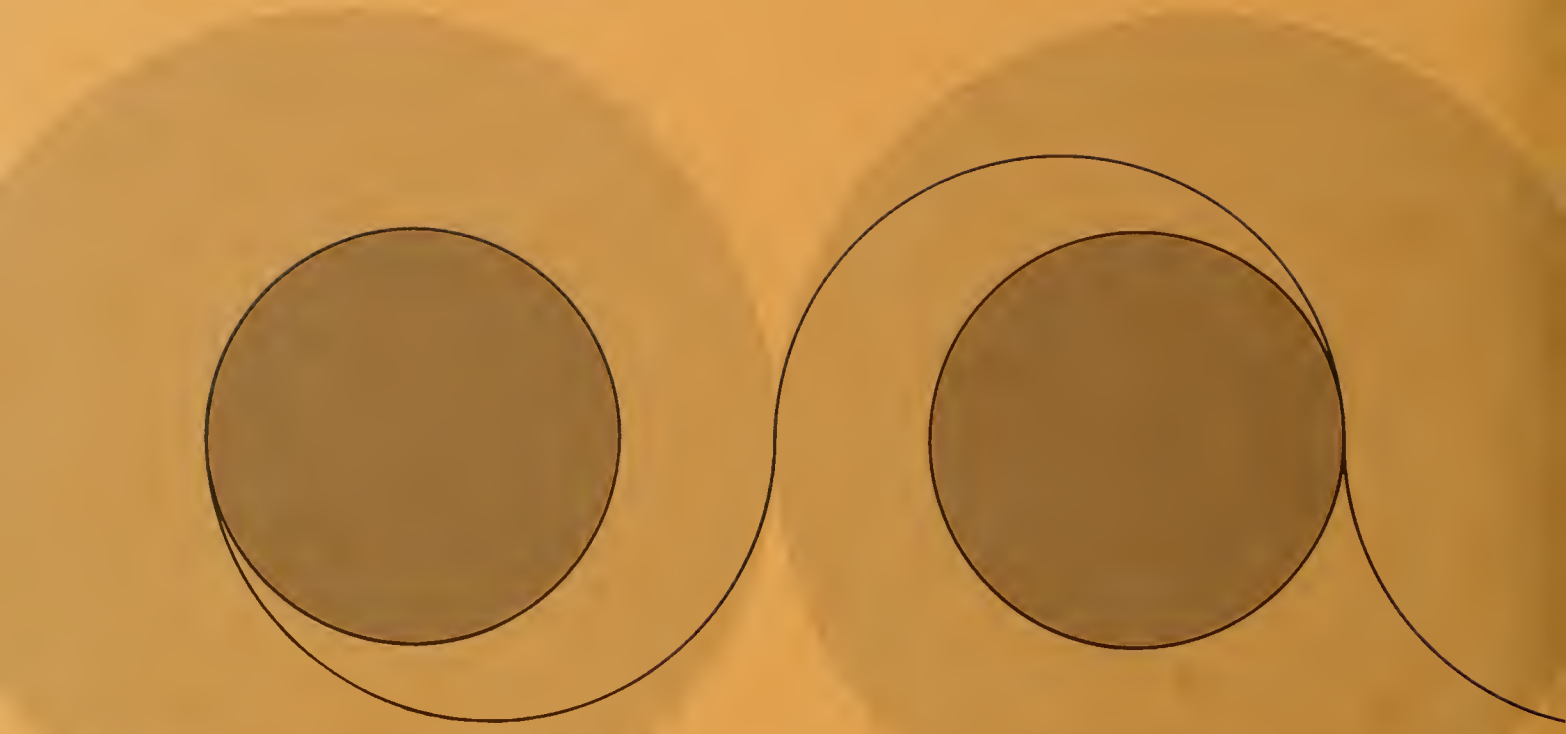
TABLE 6.6
URANIUM PROSPECTING PERMITS BY COMPANY
JULY 9, 1980

Permit Holder	County	NUMBER OF ACRES — County	NUMBER OF ACRES — Company Total	Percentage of All Acres Under Permit
Amoco	Carter	51.7	**51.7**	**10.5**
Anschutz	Carbon	24.0	**24.0**	**4.9**
Bur West	Broadwater	23.3		
	Sanders	4.0		
Bur West Total			**27.3**	**5.6**
Colorado School of Mines	Chouteau	3.8		
	Fergus	0.4		
Colorado School of Mines Total			**4.2**	**0.8**
Conoco	Jefferson	10.4		
	Mineral	6.6		
Conoco Total			**17.0**	**3.5**
Energy Reserves	Carter	7.5	**7.5**	**1.5**
Exxon	Beaverhead	6.3		
	Broadwater	1.0		
	Carbon	4.7		
	Carter	9.9		
	Deer Lodge	0.1		
	Gallatin	0.9		
	Granite	0.2		
	Jefferson	1.4		
	Madison	10.7		
	Powder River	0.3		
	Powell	0.6		
	Silver Bow	1.0		
Exxon Total			**37.1**	**7.6**
Ferret Exploration	Jefferson	4.0	**4.0**	**0.8**
G. G. K.	Carbon	1.0	**1.0**	**0.2**
Homestake Mining	Madison	0.7		
	Silver Bow	0.8		
Homestake Mining Total			**1.5**	**0.3**
Kerr-McGee	Carter	182.7	**182.7**	**37.2**
Marathon Resources	Carter	72.3	**72.3**	**14.7**
Mobil Oil	Judith Basin	8.8	**8.8**	**1.8**
Resource Associates of Alaska	Lewis & Clark	8.7	**8.7**	**1.8**
Rocky Mountain Energy	Carter	4.9	**4.9**	**1.0**

TABLE 6.6 (continued)
URANIUM PROSPECTING PERMITS BY COMPANY
JULY 9, 1980

Permit Holder	County	NUMBER OF ACRES County	NUMBER OF ACRES Company Total	Percentage of All Acres Under Permit
St. Joe American	Lewis & Clark	27.5		
	Madison	6.9		
St. Joe American Total			**34.4**	**7.0**
UNC Teton	Beaverhead	0.9		
	Deer Lodge	1.1		
UNC Teton Total			**2.0**	**0.4**
Uranerz	Beaverhead	0.7		
	Deer Lodge	0.4		
	Gallatin	0.6		
Uranerz Total			**1.7**	**0.3**
TOTAL		**490.8**	**490.8**	**100.0**

SOURCE: Montana Department of State Lands, Reclamation Division, Coal and Uranium Bureau, personal communication from Susan McAnally, July 11, 1980.



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